

# ComputerWeekly

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Thursday, July 7, 1983

## US trade war carries on

by Kevin Cahill  
COMPUTERS continue to fuel the trade row between the United States and the UK.

Foreign Office officials last Friday told a group of US correspondents that there is no dispute between the two countries.

But the Foreign Office has also admitted that it is asking the US Department of Defence to prove its allegations that the UK is the least competitive in terms of illegal computer shipments to the Eastern bloc.

The Department of Defence says that so far it is unaware of the Foreign Office request. A spokesman said that if requested the US is happy to provide proof of the problem.

He added that there is a special problem with relation to the UK. A number of computer systems shipped to the UK were diverted to Bulgaria and Yugoslavia recently.

He also said that a number of

Integrated circuit testers and photo-resist machines labelled for the UK and Spain had been diverted to Poland, Rumania and Bulgaria.

The Department of Defence spokesman was actually quoting testimony by the Under-Secretary of State for Defence and Trade Security, Richard Pearce, who gave evidence recently before the Armed Services Committee of the US Senate.

While the US maintains this attitude, and its offer to correspondents to show detailed pictures and photographs either late this week or early next, the Foreign Office's position is inconsistent, but may represent an attempt to calm down in public what is in fact a major row in private.

The US offer to show or present detailed information of the leakage of technology via the UK guarantees that whatever the Foreign Office does the row will become public.

## Query hangs over Esprit finance

by John Riley  
A QUESTION mark hangs over the financing of Esprit, the European Community £97 million, 10 year research programme proposed recently in Brussels.

Although Esprit's passage from proposal to approval is likely to be remarkably speedy by EEC standards, as national politicians, Euro-politicians and Euro-critics are all giving it top priority, there are fears that its funding will get caught up in the longer budgetary crisis that the EEC is currently facing.

Esprit is warmly supported by Parliament," said Euro MP Fernand Herman, who takes an active interest in IT matters, "but our worry is that although the Council of Ministers has approved it in principle, it has not decided how to finance it, and is relying on a solution of the total budget problem." The EEC is currently undergoing a budgetary crisis.

"We don't see a solution under the Greek Presidency, and Britain's insistence on rebates is causing problems." The 1983 budget has the cash to start the Esprit project and we hope that we will get the necessary amount for 1984 by the end of the year."

The £14.4 million (23 million ECU) pilot programme, which will be 50% funded by industry will involve several British companies and institutions, including ICL, GEC, Plessey, and the Universities of Southampton and Newcastle.

All the participants have to be members of consortia including at least one foreign concern.

ICL is teaming up with Italian, German and French companies in a two million ECU contract to study the basis for a portable communications tool environment. Another two million ECU is to go to a consortium including ICL, Honeywell, Siemens and Olivetti to study Unix based open system telecommunications.

Half of the cash will be put up by the EEC.

## Birthday Torch looks for £3 million

by Robert Parry  
BRITISH micro builder Torch this week celebrated its second birthday with a clutch of presents.

And it is looking for £3 million from a possible link with a British company.

Two new computers expand Torch's range up and down stream, bringing in the swathed 16-bit machine, the 700-series, and a low cost network workstation, the 300-series.

Both new machines will run existing Torch software under its CPM-compatible operating system CPN, and the 700-series, with its 68000 processor as well as a VME adds Unix capability.

"It's like launching a complete

range of products," says Torch's chairman Martin Vlieland-Boddy.

"We could have released a number of products over six months, but chose to launch them all in one go."

But the machines will not replace the existing Torch C-series

machines, which are still showing strong in the market. "They complement, not replace, the original Torch," adds Vlieland-Boddy. "We have quadrupled the size of our range."

As well as the new hardware, the

birthday releases feature an

electronic mail service running on networked machines - of all Torch varieties - called Net-Mail; Torch-Mail Plus, an enhanced version of the existing Torch-Mail

programme that remote program execution, timed data transfer and forward programming; and an interactive videotext system, Textel, which uses the standard Prestel user interface but runs over Torch's own local network Torch-net.

The 300-series workstation also comes in a version with synchronous communications allowing it to act as an IBM or ICL terminal.

Vlieland-Boddy expects to sell 10,000 to 15,000 units next year.

## ICL beats IBM to water contract

by Andrew Thomas  
ICL HAS beaten IBM and Prime to £3 million worth of business from the UK's largest water authority. The deal gives ICL responsibility for the DP requirements of seven of the 10 UK authorities. A 2966, CAPS-ISP and a dual 2988 are to be installed at Thames HQ at Reading.

The move will also mean a 10% reduction in staff costs, says Thames manager for computing and chairman of the Prime user

group and information services, Peter Ratcliffe. "We currently have a number of vacancies at the London IBM installation, and expect that some of the staff will not want to make the move to Reading."

According to Ratcliffe, ICL won the business on two counts: availability of software and ease of conversion of existing technical applications. The decision means the loss of a prestigious account for IBM, which currently provides

processing power for billing in the shape of two 3431/2s, and a blow for Prime, which put up a plan for a network of minicomputers.

"IBM offered us nothing but a lot of expensive expertise," says Ratcliffe, "and ICL's offer was considerably less grim. The authority decided nine months ago to make significant changes to its billing system, and the IBM system needed a total rewrite."

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TAYLOR... Interest matches our objectives.

## Star revives the apprentice days

by Philip Hunter  
FIVE trainees have been taken on by a London computer maker under a local government initiative to revive the dying tradition of apprenticeships for modern trades like information technology.

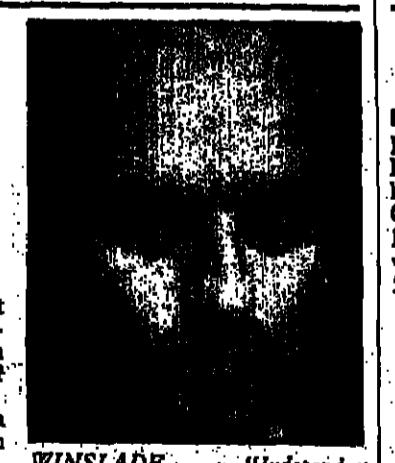
The hope is that a better chance for permanent jobs will follow after the year's training is over.

Star Computers is giving the five trainees, aged 19 to 23, a year's apprenticeship in hardware engineering with on-the-job training complementing day release courses given by the sponsor of the scheme, Hackney Borough Council.

Each apprenticeship will be paid £3,200 for the year, £2,400 coming from the council, with Star making up the difference.

Star's director of engineering, Barry DeLoble, said that the five had done so well since they started work in April that they would get a pay rise in October at the company's expense.

"We will take on at least three of the five at the end of the year," DeLoble added. "They all stand a



## Hoskyns brings commerce to market

by Philip Hunter  
HOSKYNS has brought the first of a new range of commercial applications software to market with a financial control package for IBM mainframes.

The company aims to cover a wider range of the market than before, offering users cheaper entry-level products which can later be upgraded.

The financial package costs about £50,000 and runs under DOS/VSE, MVS, CICS, VSAM and DL/I. But the price will come down for the next version of the software for the IBM 4300 range under SSX and IMS.

The software is written in a version of Cobol that is machine independent, and the company says that versions for ICL, the Hewlett-Packard 3000 mini and the Digital Equipment Vax will follow this year.

There will also be more software in the autumn, including existing

## Investors want university skills

by John Kavanagh

A NEW call for university research to be brought to the market has come from the big investment firm, Finance for Industry, which has been restructured and renamed Investors in Industry.

"There is growing interest in the creation of new businesses around university expertise - and this matches our own objectives ideally," said Geoff Taylor, director of the ventures division.

Universities should not be purely academic centres, he added. They had a key role to play in industry.

Three of the 10 start-up firms backed by Investors in Industry last year were born in universities. "We expect to see more activity of this kind," anticipated director Taylor.

The computer industry is particularly rich in start-up ventures. Over half the 26 firms backed by Taylor's division are in compu-

ting, electronics, robotics or telecommunications.

But supporting start-up firms brought the problem of finding the right management mixture, Taylor said, and that was now his most challenging task.

New companies needed the person with the idea plus good management and marketing people. Part of Investors in Industry's service involved helping to find such people.

Taylor's comments on universities comes as the National Computing Centre is seeking government funds to help get university software to market through services companies.

Investors in Industry is backed by the major UK banks.

Computer firms it has backed include terminal suppliers Cifer Systems and Pericom Data Systems, maintenance company DPCB and communications equipment firms TechTel Data Products and Fenwood Designs.

■ Leader Comment - page 13.

## Lords read privacy changes

by our Parliamentary Correspondent

LAST week it was the turn of the House of Lords to make the running on computer issues, with the second reading of the reintroduced Data Protection Bill.

Lord Elton, Under Secretary of State at the Home Office, explained changes from the original drafting of the Bill before the election, including a tightening up of the wording.

But the most fundamental change was to "Clause 7", which previously required applicants for registration of data to wait for up to two months for notification from the registrar before they could begin the new operation.

Many organisations, including small computer companies, had complained that this delay could greatly hinder their progress. Lord Elton said that the government had now decided to revise the clause so that, in the best traditions of British law, applications would be deemed registered unless found otherwise.

Applicants would therefore be able to get on with the new operation while their case for registration was being considered.

Lord Elton said that all personal data held for payroll and ac-

counting would still be exempt, as would public registers required of firms under the Companies Acts.

Lord Elwyn Jones for the opposition said that he still could not guarantee the Bill an easy passage.

Lord Elton said that the government had now decided to revise the clause so that, in the best traditions of British law, applications would be deemed registered unless found otherwise.

The main Lindop proposals was for the creation of a data protection authority with power to conduct spot checks to ensure that personal files were accurate and secure from illegal access.

The Bill makes no provision for a data protection committee, and

all responsibility lies with the registrar. Lord Elwyn Jones thought that the registrar's duties had not been clearly enough defined.

Meanwhile, the Commons heard that Essex police will this month begin trials of a computer system called Mirian to help with investigation of major crimes.

Douglas Hurd, Minister of State at the Home Office, also said that an examination of how police could best transfer data from local micro computers to a larger machine when more powerful processing was required was almost complete.

Almost half the primary schools and virtually all secondary schools now have a micro, John Butcher, Under Secretary of State for Trade and Industry, told the Commons. A further scheme for secondary schools would begin later this month.

Peter Morrison, Under Secretary of State for Employment, announced in the Commons that a computer system to provide information about jobs from all over the country would be installed at the end of this year at Job Centres.

The system would allow Job Centres to have access to vacancies at other centres via the existing national computer.

for the European Economic Community.

The agreement, which must be approved by the Hawker-Siddeley board before it becomes official, will draw on CMI engineering talent and Hawker-Siddeley funding in an amount that has yet to be

determined.

The products to be manufactured will initially be three CMI Winchester drives in the company's CM45000 family - a five-, a 10-, and a 15-megabyte Winchester (sealed) drive.

Reports circulating in the US

predict that manufacture

will commence by October 1984 at an existing Hawker-Siddeley facility in the UK. CMI's UK marketing manager, Philip White, is believed to be a contender for the post of managing director of the new venture.

ROSE... No details.

## Hawker-Siddeley and CMI poised to agree

by Howard Kerton

HAWKER-SIDDELEY Dynamics Engineering subsidiary, a Hawker-Siddeley subsidiary, and California's Computer Memories Inc (CMI) last week formed a joint venture which will manufacture CMI's 5.25-inch Winchester disc drives

for the European Economic Community.

The agreement, which must be approved by the Hawker-Siddeley board before it becomes official, will draw on CMI engineering talent and Hawker-Siddeley funding in an amount that has yet to be

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AN OUT-OF-COURT settlement has pre-empted an industrial relations hearing on the dismissal of BCS technical assistant secretary, Haman Rose. Rose would not give details of the settlement, saying that part of the agreement was that he would maintain silence.

Rose was dismissed by BCS secretary general Derek Harding in February, on the grounds of redundancy, but Rose has always maintained that he was sacked due to a clash of personalities between himself and Harding.

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The budget



# Paradyne plans to profit in Europe

by Donald Kennett  
US DATA communications company Paradyne has big plans for expansion into Europe.

European vice-president David Crofts said: "At present we do only 10% of our business outside the US. We intend that to be 40% as soon as possible."

The company has been trading in Europe over the last five years through Ericsson and CASE. Ericsson has won significant orders in West Germany with Paradyne modems, particularly on international circuits where it has been able to sell the Paradyne 16K bit-per-second modem directly to private companies that were previously using 9.6Kbps modems. The German Bunde post maintains a monopoly for all types of modems for inland use.

The relationship with CASE is a partnership in which CASE builds Paradyne circuit boards into its own equipment and Paradyne manufactures CASE's DCX switching multiplexers under

licences in the US.

Last week the European division took extra space for its head office in Windsor and by the end of the year it plans to open an additional office.

"The new facility will be for software not hardware," said Crofts. "The real added value is much more in software and services than in manufacturing and as time goes on it becomes much less important to have manufacturing than development." The company plans to start manufacturing in Europe in the next 12 to 18 months.

Meanwhile, the company wants to expand through direct sales to users, as well as by signing up more OEM customers, distributors and partners in joint ventures. Most of its 41 distributors are in the US, but 12 are in Europe. Some are substantial manufacturers in their own right, for example Elbit in Israel.

"We have set up direct sales operations in the UK, West Ger-

many and Japan," said Crofts. "In other countries we are signing up distributors with an agreement that allows for Paradyne to take over all or part of the company as a subsidiary in the future."

The total European staff was 40 at the beginning of the year, is 60 now and is expected to be 80 by the end of the year.

The company was started by two engineers in an office over a ladies' hairdresser in Tampa, Florida, in the late 60s.

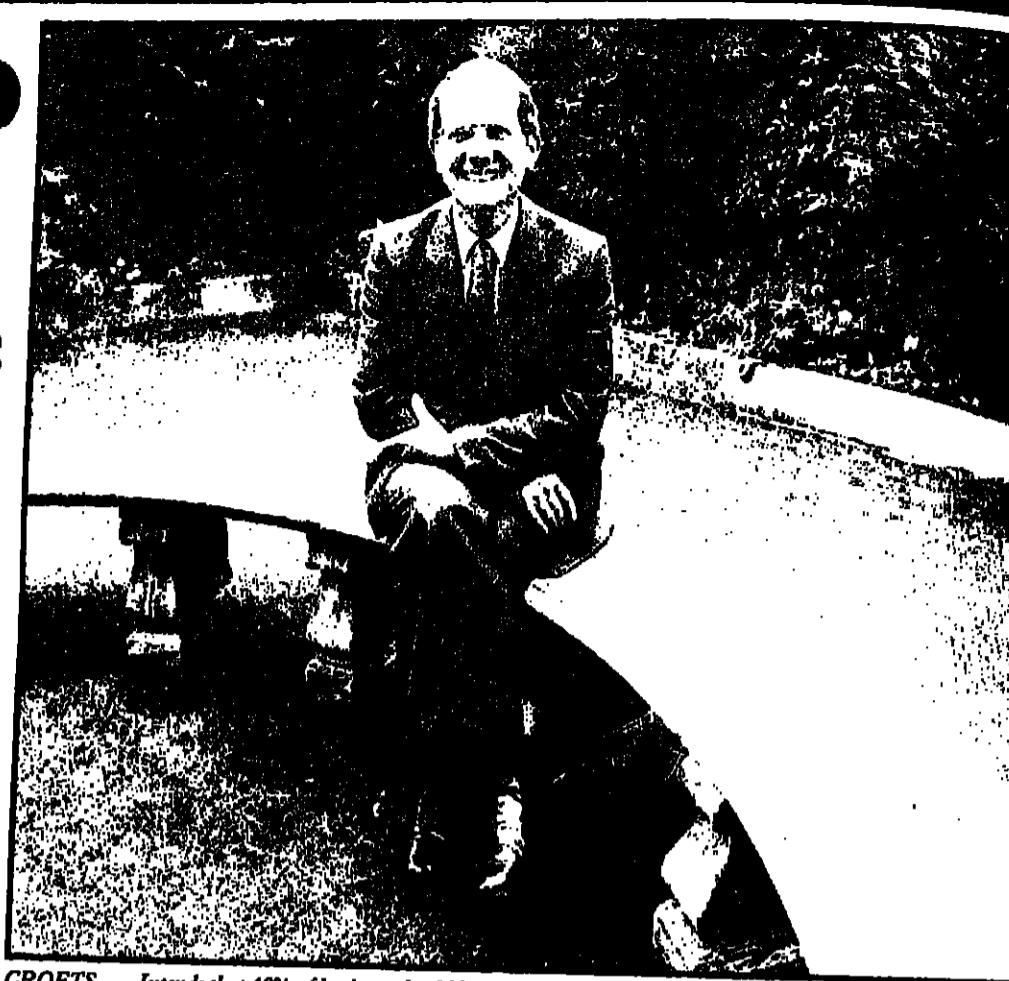
It was 1974 before either of them realised that growing and making a profit were necessary, but shortly after that they took on Robert Wiggins as president.

From 1977 to 1979 turnover tripled and from 1979 to 1981 it grew by 50% a year.

Last year it was \$207 million with \$27 million after tax earnings.

This year it plans to spend \$20 million on research and development and 400 of its 3,200 staff are employed on R&D.

CROFTS... Intends that 40% of business should be outside US.



Frost and Sullivan make 1983 forecast

by George Black

THE year 1983 will be the year of the videodisc - this is the rather late prediction from New York business researchers Frost and Sullivan, who say that the computer giants are set to create a boom for videodisc software.

IBM, DEC, Apple, Data General, NCR and Texas Instruments may be about to launch into the market for microcomputer and videodisc integrated systems at breakthrough price levels, according to the study.

By the end of the year point-of-sale systems will be standard in computer stores and will begin to spread through all American chain stores, it argues.

This will provide the base for the videodisc boom.

\* The Interactive Videodisc Software Market, 288 pages, from Frost and Sullivan, 104-112 Marylebone Lane, London W1M 5PU, \$1,275.

## DEC extends its cures from a console to French Riviera

by Jack Gee

DEC HAS increased its remote diagnosis potential for computer failures in Western Europe by opening a centre at Valbonne on the French Riviera to supplement the capacity of its Basingstoke centre, opened in January 1980.

The centre will be linked to 2,500 DEC computers, principally Vax and PDP-11/44s into which remote diagnosis capability has been built at the design stage.

The Basingstoke centre serves 1,750 systems installed in the UK and Northern Europe.

DEC says it has chosen the Sophia-Antipolis high-technology industrial park at Valbonne to extend its remote diagnosis operations because of the high standard of the French telephone network.

DEC's first centre of this type went into operation in 1977 at Colorado Springs in the US and is

linked to 10,000 American and Canadian computers.

Connection to the Valbonne centre is not compulsory for customers.

But those who refuse the service are required to pay a 10% surcharge for maintenance. Remote diagnosis is provided free of charge, except for rental of a direct telephone line whose performance is checked once a fortnight.

The establishment of the remote diagnosis centre is a new step in DEC's European decentralisation policy. DEC hopes to create a factory in France which would become its fifth in Europe.

The Valbonne centre, which will operate around the clock throughout the year, is equipped with three PDP-11/70 computers. These contain files on customers' machines and include detailed configurations, breakdown histories and preventive maintenance planning.

DEC is planning long distance modification of basic software and transmission of software within a few years when transmission speeds can be raised from today's

300 bauds to 1,200 and up to 9,600 bauds.

This will permit rapid updating of microcodes and diagnosis of network problems involving groups of customers. Systems, interfaces, modems and telecommunications links will be tested in this manner. No target date has yet been set by DEC for this new service.

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DEC is planning long distance modification of basic software and transmission of software within a few years when transmission speeds can be raised from today's

## HP brings three minis to its IBM battle

by John Riley

HEWLETT-Packard announced the results of its massive organisational shakeup aimed at beating IBM at the lower end of the market last week as it launched three new replacement minicomputers.

But those who refuse the service are required to pay a 10% surcharge for maintenance. Remote diagnosis is provided free of charge, except for rental of a direct telephone line whose performance is checked once a fortnight.

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## MICRO NEWS

# Intel's low power 8086 is here

THE low power version of Intel's 8086 16-bit processor has arrived. The CMOS design from Harris Semiconductor, spawned by a technology exchange agreement sealed in June 1981, is now being sampled worldwide, with European volume delivery from Harris promised for September.

But the CMOS chip, which uses only 10% of the electrical power, of its NMOS forerunner, is unlikely to hit the really high volumes needed to satisfy the commercial marketplace until Intel comes on-stream with its version of the CMOS design, expected in about a year's time.

This process compatibility is starting now with the 8086, and will continue to move closer as the companies work together.

The most obvious processors to appear next in CMOS versions are the iAPX 186 and 188, which extend the 8086 instruction set while integrating many peripheral functions on to the main chip. This reduces the chip count in a system, saving board space - and so cost - and enhancing reliability, again features likely to attract makers of portable kit.

Announcements by Intel and Harris on the next designs to be moved over to CMOS are likely in two or three months. Intel has already stated its intention to design all future devices in its CMOS technology.

The Harris 80C86 processor is directly compatible with the existing NMOS design. It has pin-for-pin similarity, the same TTL level input/output specifications, performance parity at 5MHz and complete software compatibility. An 8MHz part is set to appear in the first quarter of next year.

The company has moved from its small division approach over the past six months and harnessed its numerous divisions into five cohesive groups. One of these groups, the Business Development Group, is now co-ordinating all HP's computer marketing to beat IBM at its own game.

"We have had the products, but IBM has had a superior selling, marketing and support organisation," said Roger Cooper, HP's European sales manager in Geneva last week. "We have now moved from being a product oriented company to a marketing company, with a non-confusing interface through the BDG to get the message across effectively to our cus-



MIKE BREWER... Has moved away from Apple, but remains a dealer.

## Apple pioneer whets its personal appetite

APPLE pioneer Data Efficiency, the company which first brought Apple micros into the UK, is moving with the times. It has just added the IBM Personal Computer to its list, and has marked the event by changing the name of its microcomputer systems division to the desk-top computers division.

Marketing director Stephen Brewer explains: "Our loyalty to Apple is important to us for obvious reasons," he says, "and we shall continue to expand that part of our business. But the opportunity the IBM Personal Computer offers cannot be missed."

Data Efficiency first came into micros through Microsense, the first UK Apple distributor. Microsense was taken over by Apple in 1981, as Apple Computer (UK), under the two Brewers - Stephen as marketing director and brother Mike as managing director. They both have since moved away from Apple, but Data Efficiency remains a dealer.

"The retail marketplace is maturing," adds Stephen Brewer. "Customers are becoming more certain of their choice - usually Apple and more recently IBM."



STEPHEN BREWER... Opportunity cannot be missed.

## Don't impose, says manager

by John Kavanagh

COMPUTING management should develop guidelines for end users considering microcomputers - but should not impose standard machines on them.

So says David Eagles, technology research manager at TSB Trust Company, part of the Trustee Savings Bank, who is writing a business man's guide to buying microcomputers.

"If you specify the functions properly and get the right dealer, it doesn't matter what machine you get," Eagles says. "Some machines have big software libraries so you think about standardising - but it has to come through leadership."

Eagles' comments come after a recent National Computing Centre survey, which showed that only a third of end users call on the data processing department for advice or support when they buy their first microcomputers.

Micro News is compiled by Robert Parry

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## SOFTWARE FILE

Tycom to hedge bets on future

By Claire Gooding  
MANUFACTURER Tycom is bringing its bets with a selection of operating systems for its new "future-proof" computer, the Microframe. Tycom has signed a deal with Logica, the UK supplier of Microsoft's Unix-based Xenix, and another with MIPS, for MBOSS and ROS systems.

Tycom appears to be making sure of plenty of applications for the Microframe in the short term under DOS, while keeping a finger in the Unix pie for the future. Other operating systems on offer with the 68000-based Microframe include Digital Research's CP/M-86 and CP/M-80, Microsoft's MS-DOS, and the UCSD-P system.

Tycom's choice of Xenix was made on the basis that MS-DOS Version 2.0 will provide an upward path to Xenix. Xenix will be available as a plug-in board option, leaving the native 8088 processor to handle I/O operations.

## Sixth Assassin

ICL's agricultural division has written a new text retrieval package to run on IBM mainframes under MVS, DEC's Vax range and ICL's ME29 and 2900s. The system, named Assassin-6, is a revamp of a suite originated in the 1960s. Previous Assassins have been widely used in industry, commerce, government and research.

## Training venture

US MICRO maker Wicat has agreed with Thorn-EMI's Datavolve on a joint venture in computer-based training. Datavolve has recently been working with the Manpower Services Commission on Project Author, aiming to produce consultants and course authors for the subject. The project will use Wicat's Wise software. Wicat has also sold computer-based training systems to British Telecom and the Defence Ministry.

## WP package

TALBOT Computers of Bournemouth has brought out a word processing package for the portable HX-20 Epson micro. Called Intext, the program converts the machine into a portable memory typewriter with printer, micro-cassette for storage and viewing window. Epson dealers and distributors will sell Intext in the UK, South Africa and Canada.

## Deal with Yard

COHOL expert Micro Focus has contracted with Glasgow consulting engineer Yard to market its Corval 68 compilers for Intel's 8086, 8089 and 8085 microprocessors. Yard also sells compilers developed at the Royal Military College of Science for DEC Vax and PDP-11 hardware.

## Roscoe option

APPLIED Data Research has added the extended timesharing option (ETS) to its Roscoe software environment. This will allow the 1,200 Roscoe sites to support applications systems such as the SAS Institute range of products.

## Price cut

INTELLIGENCE UK has cut the price of its 8-bit Micromodeller program from £245 to £250. It is converting the system for use on Unix. A DEC PDP-11 version, jointly developed with Jensen Computer Services of Bristol, has already been installed at eight trial sites.

## Advice for micro importers

SOFTWARE Sciences has announced a service for companies that import and distribute peripheral and microcomputer hardware.

Under contract Software will provide technical support, including collecting the equipment on its behalf.

# Military style irks Budge's new boss

NEW owner of the Wang software house, Oliver Budge has hit out at "drastic mismanagement" which he says nearly caused the firm to go into liquidation.

Patriot Nirumvala, vice-chairman of Bahrain-based Information Systems International (ISI), which took over the Budge operation last month, said the style of management had been "military".

"People did not feel comfortable because they were not split into groups dedicated to one task," he said.

And he blamed Budge for "concentrating on products rather than people".

"He kept on developing products after the money had run out and they were not for the right machines," said Nirumvala.

Budge intended to stay with the firm after the takeover as a consultant, but he departed after a row.

"I told him I didn't want any consultant," said Nirumvala.

Now Budge has gone off to

launch another Wang-based enterprise, Regent Systems, with his former assistant Peter Gore.

Nirumvala believes the future lies with the 32-bit supermini and to shift the firm's direction to developing software for DEC, Vax, Data General and HP 3000 hardware.

The new bosses have increased the payroll from 12 to 18 and hope to recruit at the rate of a dozen a year.

An announcement of a new product is expected in October.

Budge was invited to discuss the matter but was unavailable for comment.

His firm was taken over by ISI for a sum said to be in excess of £100,000 after four bidders had offered to save it from liquidation. ISI is to bring in Richard Hunt as managing director from October. Out of 22 former Budge staff 12 to 15 were expected to be offered continued employment there.

Budge's troubles came to a head when its backer, Technical Development Capital, refused it a further cash injection.

NIRUMVALA . . . "People did not feel comfortable."



## SOFTWARE FILE

# Comserv woos drug industry

Nirumvala also thinks Budge spent too much time on Wang word processing level applications rather than exploiting its more lucrative investment in IBM System 34s.

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Budge's troubles came to a head when its backer, Technical Development Capital, refused it a further cash injection.

Comserv has sought to

overcome this hesitancy by adding to its suite, last year renamed AMAPS/Q (to signify a quantum leap), a new module for lot traceability. This is the drug firms' jargon for the ability to track a consignment from the supply of components all the way through to the consumer.

The lack of this facility has deterred the rich National Health Service suppliers from investing in software, because they have not been able to comply with the stringent legal demands. Britain, the US and Sweden have led the world with tough requirements on health services to protect their clients. Many drug firms still do a lot of tracing manually.

Comserv has sought to



HINZE . . . "It needed a pioneer to convince them."

About 25 prospective customers and management consultants have heard Hinze's talk, including delegates from Glaxo, Roche, Fisons and Travenol.

The first European site will be Hoechst, at Frankfurt, which is likely to be running by October.

"It needed a pioneer to convince them," said Hinze. "When Redken Labs decided to go for it, the others began to show a lot of interest."

The prototype of the AMAPS/Q

# IBM inspires awe with its new system software

FIRST reactions to IBM's announcement of its new DB-2 system software have been a mixture of awe and foreboding.

Although the relational database management system unveiled by IBM last month will not be available until the third quarter of next year, experts are already saying it will cause more than just ripples in the sea of software.

Boole and Babage consultant Tom Bird told London users conference: "I was just amazed when I looked over the functions of DB-2. Every utility from IMS is there, I was flabbergasted at how complete a product it is — far superior in many areas to what I anticipated."

And David Upman, of Relational Database Association in Seattle, predicted that the release of DB-2 could push many competitors out of the system software business towards applications for vertical markets.

"People will find it very difficult to come into this market with a

lower-priced product or with a better engine. Applications could be the only way for them to go," he said.

He said DB-2 was not being considered as a replacement for IMS and was a completely different piece of software to IBM's earlier development known as System R.

DB-2 is intended to run under MVS/XA and MVS/320 operating systems and to use the SQL/DS language. It is being interpreted as part of IBM's slowly-unfolding information centre concept, designed to get data processing departments to train end-users in self-help.

The path being followed was made clearer by another recent announcement of a deal with Artificial Intelligence Corporation in Massachusetts to offer its Intellect English language query system. This will be available under DOS/VSE, MVS and VM operating systems in the US from September.

# Rivals link up in bid to grab freight business

TWO former rivals at the top of the market for freight shipping systems have combined in an operation that could force our others.

They are Geisco, the American General Electric's systems house and EAC Data of Copenhagen. Geisco's customers include OCL, OOCL and Mobil Shipping; EAC's include Scandutch and the Mexican TMM. Between them they will have a formidable position in the international transport field.

By a recent agreement Geisco is marketing EAC's systems for equipment management, forecasting and data collection. EAC benefits by being able to make use of General Electric's worldwide teleprocessing network.

Geisco, like other traditional time-sharing bureaux, has been moving steadily towards changing its image to that of an all-round systems house. Now it offers its shipping facilities either as the bureau's Mark 111 service or as a software package.

EAC was set up in 1967 to provide computer backing for transport, trade and manufacturing firms. It has offices in North America, Africa and the Far East.

"We're meeting EAC time and time again in the marketplace," said Geisco's shipping division chief John Thorpe. "The logical conclusion was, if you can't beat 'em, join 'em."

While continuing to support its old bureau customers, Geisco is now looking for emerging vertical markets to exploit and is using its telecommunications and electronic mail expertise to make transport its main area.

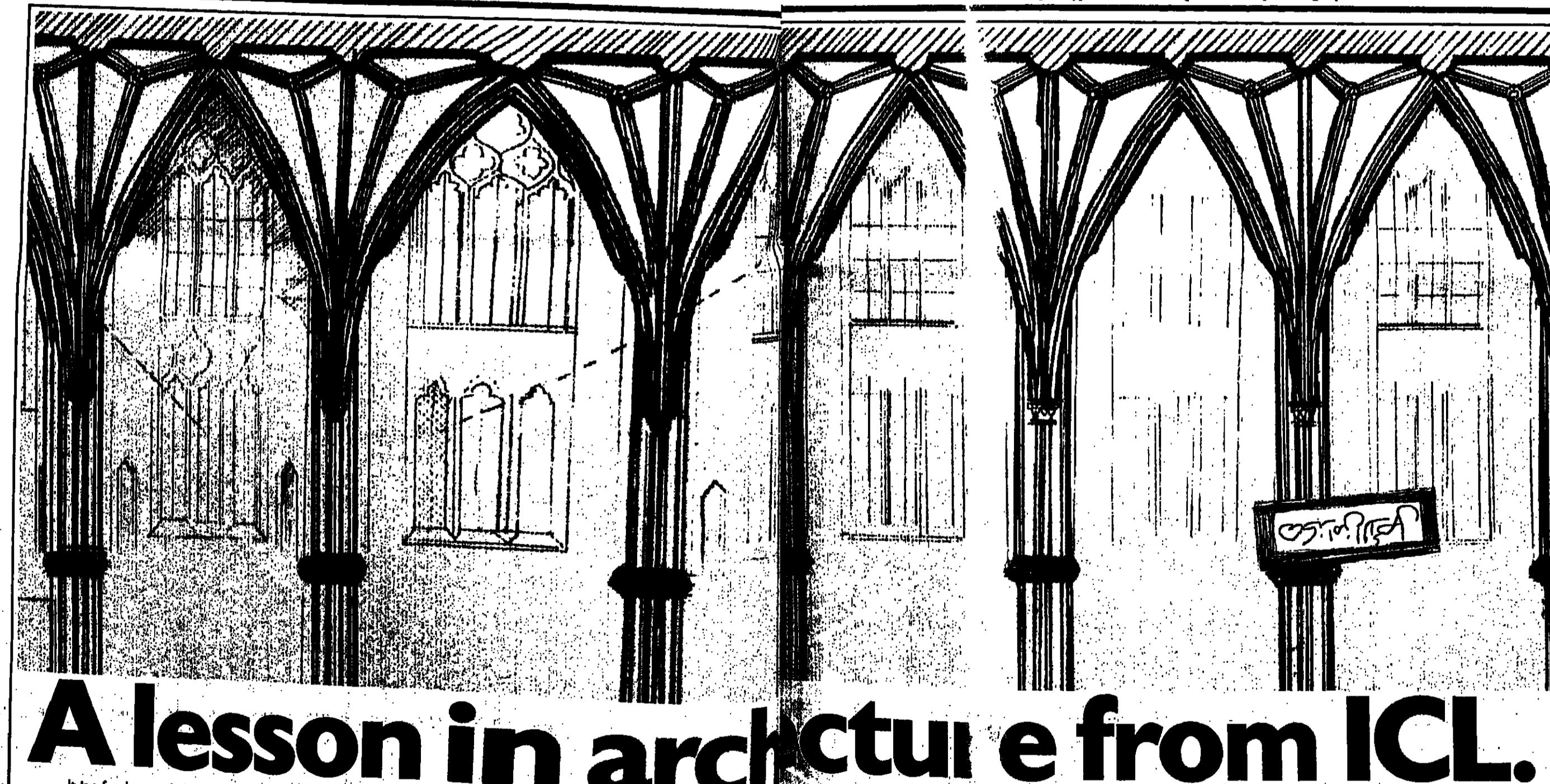
# Generator has bottle

by John Riley  
AN applications generator running on a Digital Equipment minicomputer has more "bottle" in it than Cobol on a Honeywell batch installation, say the bottle-makers.

York-based bottle manufacturer Redfearn National Glass has introduced Hewlett Packard minicomputers to a Vax 750 minicomputer supporting the applications generator, Admins. The product is "an applications generator, but not a program generator," explained Nelson. "It is a set of pre-written programs that cover all business functions that cover all business functions within a business-oriented system. I regard it not as a software product but as an electronic filing system."

The future looks bleak for the 20 or so DP staff at Redfearn, and the crunch will come when the Honeywell machine is finally phased out in October 1984. Nelson says four people are concerned with the Vax working in user departments.

Software File is compiled by George Black



# A lesson in architecture from ICL.

It is a fundamental principle of architecture that loads are best supported by distributing them evenly.

Conventional computer systems demand that a single central processor handles all the mundane tasks of organising input and output, filing, and communication. The result is that it is often too overburdened to handle the application.

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distributed processing throughout, with systems within the network sharing their resources.

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## COMPANY NEWS



GRAY... Designing Cray 3, a machine of as yet unspecified power.

# Cray outstrips world in development spend

A COMPUTER company, Cray Research, leads the US and consequently the world in terms of research and development (R & D) dollars on R & D out of total sales of \$34 billion.

The number two company in terms of total dollars spent was AT&T, which narrowly beat IBM, with R & D expenditure of \$2.126 billion, but on a turnover of \$65 billion. The number one slot goes to General Motors, the American car giant, which spent \$2.175 billion on R & D on turnover of \$60 billion.

The *BusinessWeek* survey covers all publicly listed companies in the US having sales of more than \$35 million, and is summarised in three key tables. The first of those, in which IBM appears in the number three slot, is the ranking of the top 15 US companies in terms of dollars spent.

According to this table, which includes a total of six computer companies, IBM spent \$2,053 billion

one of the fastest R & D spend recoveries of all time.

Cray Research will shortly deliver the Cray 2, the non-compatible successor to the Cray 1. At the same time, it is commencing delivery of the XMP/Cray compatible range of vector processors, or supercomputers as they are more commonly known.

Work on the Cray 3, a machine of as yet unspecified power, is well established, and if its designer, Seymour Cray, follows the speed development path of his previous machines, it should come in somewhere between 5,000 and 10,000 million instructions per second.

The success of the Cray endeavour, and its very modest costs, raises a huge question mark over the vast floods of money being hurled into the supercomputer arena by other companies and governments.

The French government has decided to spend about \$40 million to develop a French supercomputer. The US military is spending several hundred million dollars in the same endeavour, as is the Japanese government in its supercomputer project.

The company also comes in a very respectable fourth place in the table of high R & D spenders in terms of total sales. Cray spends 20.1% of its sales revenue on developing new machines.

Meanwhile, a small company in Witchita Falls, near Minneapolis, continues to be profitable, and to develop the world's fastest computers, with the benefit of nothing except its shareholders' money and its own modest profits.

The company is still building and selling the Cray 1, which was initially developed for a cost of \$8.5 million, and which subsequently sold for about \$20 million.

Whatever challenge they face, though, both Cray and Amdahl are experiencing an amazing near doubling of sales this year.

unusual R & D challenge.

Amdahl Corp is currently spending \$81.3 million per annum, on sales of \$462 million, in a bid to build mainframes that outperform both the Japanese and IBM. Its total R & D spend is more than five times Amdahl Corp's total sales.

This sum, however, is small compared with IBM's annual spend in its mainframe labs, which employ 3,500 people at an annual cost of about \$250 to \$300 million.

Assuming that IBM, and, indeed, Amdahl Corp produce a new mainframe every four or five years, the R & D cost of a mainframe is \$1.2 to \$1.6 billion from IBM but something like \$300 to \$400 million from Amdahl Corp.

Both Amdahl Corp and IBM are now facing a major challenge from the founder of the former and the ex-chief designer of the latter.

Dr Gene Amdahl is well down the road, with his son Carl, to producing the first Trilogy Machine, which will cost something like \$250 million to develop, including first year sales costs.

Trilogy, however, is not the only challenge faced by Amdahl Corp. Just as Cray Research is facing a massive Japanese challenge, is Amdahl Corp.

Last year there were just two supercomputer companies in the world - Cray and CDC. This year there are six - the additions being three Japanese and another American company, Denicor.

The number seven slot in the two tables covering R & D spend per employee and as a percentage of sales is occupied by Amdahl Corporation, a company facing an

unusually high R & D challenge.

Sperry Corp, now mated with Trilogy for at least part of its R & D, came in the number 15 slot with spending of \$398 million. Just ahead of Sperry is Hewlett-Packard, with total R & D of \$424 million.

Having covered the giants, however, the next two tables cover R & D spending as a percentage of sales, and in terms of dollars per employee. This is where computer companies really shine.

Cray Research, which is currently building not one, but two supercomputers, gets the top slot in terms of dollars per employee, with total R & D spent per worker of \$20,958.

The company also comes in a very respectable fourth place in the table of high R & D spenders in terms of total sales. Cray spends 20.1% of its sales revenue on developing new machines.

Last year Cray Research had total sales, based on deliveries of about 16 Cray 1 and XMP computers, of \$141 million and profits of \$19 million.

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Whatever challenge they face, though, both Cray and Amdahl are experiencing an amazing near doubling of sales this year.

THREE MEASURES OF THE TOP 15 IN R&D SPENDING	
	IN TOTAL DOLLARS (millions)
	IN PERCENT OF SALES
1. General Motors	82,175
2. AT&T	2,128*
3. IBM	2,060
4. Ford Motor	1,784
5. DuPont	1,470
6. United Technologies	934
7. General Electric	781
8. Eastman Kodak	707
9. Xerox	691
10. Boeing	591
11. Xeric	545
12. ITT	519
13. Dow Chemical	490
14. Hewlett-Packard	424
15. Sperry	398

\*Includes \$1.5 billion spent by Western Electric Co and other subsidiaries, not reported in AT&T's 10K.

	IN DOLLARS PER EMPLOYEE
1. Cray Research	\$20,958
2. Auto-Trol Technology	14,200
3. Teletronics	14,100
4. Applied Materials	13,851
5. Policy Management Systems	13,854
6. LTX	13,770
7. Amdahl	13,546
8. Computer Consoles	13,111
9. Convatec Technologies	12,268
10. Varco International	11,452
11. GCA	11,320
12. LTX	10,983
13. Intergraph	10,772
14. EECO	10,456
15. Merck	10,006

Data Standard & Poor's Computer Services Inc.

Source: *BusinessWeek*, a weekly magazine published by McGraw-Hill World News New York.

## Mitel heralds shares rise

WITH few exceptions, shares in computer companies have been rising recently, led by investor confidence in the success of Mitel.

Mitel is Canadian-based and is quoted in both New York and London. Its shares collapsed to \$1.3 when IBM decided to invest in Mitel competitor Rolm, forcing Mitel to back out of an agreement in principle with IBM to develop the DRX 2000 digital switch.

The shares have now returned to \$17, about half of the year's high of \$30.

According to Gregory P. Richards, an industry analyst at stockbroker Morgan Stanley, quoted in the *Wall Street Journal*, the company has a superb market share in its main business, sales of small private telephone exchanges, and there has been a major improvement in orders.

Reaction in New York has been conditioned to some extent by a report from prestigious San Francisco venture capital stockbroker Hambrecht and Quist, which threw plenty of cold water on the Rolm/IBM link up while continuing to show guarded optimism that Mitel would get the key bid.

IBM stock, following some very optimistic remarks by chairman John R. Opel about the prospects for the remainder of 1983, has risen to a four-year high of \$17.5. Opel's remarks are supported by companies financing customer purchases of IBM kit, which claim that business is better than ever.

## Wood leaves BTG in black

THE National Enterprise Board, home of the two major constituents of the British Technology Group, has converted its 1981 loss of £6.24 million into a profit of £4.2 million.

This turnaround comes as Sir Frederick Wood, the chairman and architect of the turnaround, announced that he expected his successor to be named by the government within a month.

Sir Frederick is leaving partly,

at least, because of disagreement with the government about the future funding and direction of the British Technology Group.

He said that along with the name of his successor he expected the government to give a clear indication of what it expected from the organisation in the future.

The company is the parent of video terminal maker Newbury Data and of disc maker United Peripherals. Turnover for the whole of that group in 1981 was £27 million, which rose to £47 million in 1982 and looks set to head for £60 million in 1983.

In addition Data Recording is expected to show a profit of £2 million for 1983, compared with losses in previous years.

### Performance of past and present companies in the British Technology Group

Male profit and loss contributions by computer companies associated with the British Technology Group

	1982 (£)	1981 (£)
1. Logic Holdings	260,000	240,000
2. Logic Securities	35,000	27,000
3. Logic VTS Limited	220,000	150,000
4. Microdata Systems	170,000	150,000
5. System Programming Holdings	170,000	20,000
6. Total	910,000	510,000
	(110,000)	(50,000)
	800,000	460,000

Principal losses and gains by the British Technology Group in disposal of computer companies

	1982 (£)	1981 (£)
1. Technical Computer	(40,000)	191,400
2. Logica Group	(50,000)	191,400
3. Ferndale Limited	(60,000)	210,000
4. System Designers International	(10,000)	100,000
5. Nixx	(10,000)	100,000
6. Total	100,000	510,000

Company News is compiled by Karen Cahill

## Cray outstrips world in development spend

one of the fastest R & D spend recoveries of all time.

Cray Research will shortly deliver the Cray 2, the non-compatible successor to the Cray 1. At the same time, it is commencing delivery of the XMP/Cray compatible range of vector processors, or supercomputers as they are more commonly known.

Work on the Cray 3, a machine of as yet unspecified power, is well established, and if its designer, Seymour Cray, follows the speed development path of his previous machines, it should come in somewhere between 5,000 and 10,000 million instructions per second.

The success of the Cray endeavour, and its very modest costs, raises a huge question mark over the vast floods of money being hurled into the supercomputer arena by other companies and governments.

The French government has decided to spend about \$40 million to develop a French supercomputer. The US military is spending several hundred million dollars in the same endeavour, as is the Japanese government in its supercomputer project.

The company also comes in a very respectable fourth place in the table of high R & D spenders in terms of total sales. Cray spends 20.1% of its sales revenue on developing new machines.

Meanwhile, a small company in Witchita Falls, near Minneapolis, continues to be profitable, and to develop the world's fastest computers, with the benefit of nothing except its shareholders' money and its own modest profits.

The company is still building and selling the Cray 1, which was initially developed for a cost of \$8.5 million, and which subsequently sold for about \$20 million.

Whatever challenge they face, though, both Cray and Amdahl are experiencing an amazing near doubling of sales this year.

unusual R & D challenge.

Amdahl Corp is currently spending \$81.3 million per annum, on sales of \$462 million, in a bid to build mainframes that outperform both the Japanese and IBM. Its total R & D spend is more than five times Amdahl Corp's total sales.

This sum, however, is small compared with IBM's annual spend in its mainframe labs, which employ 3,500 people at an annual cost of about \$250 to \$300 million.

Assuming that IBM, and, indeed, Amdahl Corp produce a new mainframe every four or five years, the R & D cost of a mainframe is \$1.2 to \$1.6 billion from IBM but something like \$300 to \$400 million from Amdahl Corp.

Both Amdahl Corp and IBM are now facing a major challenge from the founder of the former and the ex-chief designer of the latter.

Dr Gene Amdahl is well down the road, with his son Carl, to producing the first Trilogy Machine, which will cost something like \$250 million to develop, including first year sales costs.

Trilogy, however, is not the only challenge faced by Amdahl Corp. Just as Cray Research is facing a massive Japanese challenge, is Amdahl Corp.

Last year there were just two supercomputer companies in the world - Cray and CDC. This year there are six - the additions being three Japanese and another American company, Denicor.

The number seven slot in the two tables covering R & D spend per employee and as a percentage of sales is occupied by Amdahl Corporation, a company facing an

## BANKING

# TSB is banking on its own clearing centre

Scotland's Trustee Savings Bank will soon start processing its own cheques... Catherine Smith reports

time they collect any vouchers that have arrived for them.

All that is now going to change.

The objective is to

## PROFILE



OSBORNE... Jetting round Europe with news of new computer.

## Trendsetter Adam can also follow

YOU either set trends or follow them if you are to survive in the micro business. You can make a comfortable living either way – but if you manage to combine the two, things look decidedly rosy.

It was just this attitude to set a trend – produce a machine that almost immediately sired a host of rival products – while following the mainstream of microcomputing that put Adam Osborne quickly into the top five personal computer makers.

Born in Bangkok, of British parents, he went to school in England, then to Birmingham University to study chemical engineering. But it was the US that beckoned, and he moved across the Atlantic to take a PhD in chemical engineering at the University of Delaware. Three years each with Kellogg and Shell followed, then he founded his own company in 1970.

Programming and technical writing consultancy to the mini and micro industries lead to his big break in 1975 – the publication of his book *An Introduction to Microcomputers*. Another 40 titles on microelectronics and microcomputing followed.

by Robert Parry

It was the sale of this first company, Osborne & Associates, to McGraw-Hill in 1979 that gave Osborne the cash to set up in the micro making business himself, bringing to bear his ideas of the future market trends gleaned from his years as a columnist and micro guru.

Osborne Computer set out the micro to plug the gap he saw in the market. The first Osborne 1 appeared in June 1981, a cheap portable machine which, because it bundled a suite of well-established software all in for the basic price, has become the yardstick for a whole new class of machine.

## 10 YEARS AGO

FROM COMPUTER WEEKLY OF JULY 12, 1973: The government approved aid of £25.8 million towards developing ICL's New Range of computers, estimated at costing \$160 million in total from 1971-78. Ferranti made Heathrow the first airport in the world with its own air traffic control simulator... Thorn Industries acquired UK rights for IME range of visible and desk size computers... F. W. Woolworth ordered about £1 million worth of ICL VDUs.

## COMPANY PROFILE

## Gould figures that it's now all one big happy family

THE top men at Gould are wearing a small figure 1 on their left lapels this year. It is not to symbolise the fact that they are first in any category although most of them are quietly confident that they are leaders in a number of fields, but to emphasise that Gould is one company.

The concern with identity is more than just the average management fad. For most of the people now working in the Gould empire were not in it four years ago and most of those in it four years ago are now out.

In 1979 Gould was an industrial and electrical conglomerate with sales just over the billion dollar mark. It then decided to shed its industrial and electrical products holdings and move into electronics.

Bill Ylvisaker, chairman and

chief executive officer, said: "We did this for two reasons. First because it was the market that was growing the fastest, taken before profit and return on investment. Secondly we believed that there were about to be major changes in the industrial economy of the world.

The management of both the semiconductor firms had wanted no part of a deal with Gould and in the case of Mostek it had been rumoured that the company's corporate officers would have left if the Gould bid had succeeded.

For Gould had the reputation of being a very hard company. It had built up its electrical and industrial empire under the tough, and some would say, ruthless, leadership of Bill Ylvisaker, who had taken over in the late sixties.

by Ron Coates

Harry Caunter, executive vice-president and 20 year plus veteran at Gould, recently described the firm's changed management style as "quite a change. We used to take over old companies, throw the top people out and put in our own management. Now we take over good companies and leave the management there. We put money behind them and make them better."

David Simpson, Gould president and chief operating officer, quite clear on what he thinks the benefits of being bought by Gould. Pointing to SEL he said: "I made it more successful. It was a successful company and we could afford to invest the right kind of money to make it more so."

"And at the AMI they had very prudent management. They were not building the facilities they needed because they didn't have the cash. We put \$145 million into it last year and will do the same this year."

Gould has doubled its facilities in the US and a joint venture in Austria with steel giant Voest Alpine which comes a stream later this year will replace its US capabilities.

Now Gould has moved much more of the responsibility and the risk taking to its divisional levels and has adopted a committee style of management from the board. Always one to take advantage of an opportunity, Ylvisaker is delighted to have had to allow more entrepreneurship."

Ylvisaker said: "It has involved a change of mind set – the way of managing the company. Success in electronics comes from people and creativity and we found that we had to allow more entrepreneurship."

Gould then turned around and put in a bid for Fairchild Semiconductor, one of the pioneer semiconductor firms. The company's management described the bid as unsolicited and rejected the \$300 million deal. Gould, undeterred, upped the ante by three dollars a share to \$37 and then to \$70 a share in the first weeks of May, 1979.

Within a week Fairchild had announced the surprise acceptance of a bid from the oil technology giant Schlumberger at only \$66 a share. Gould had already started litigation designed to force Fairchild's board to accept its own offer.

Gould would appear to have been pushed into its "change of mind set" by its rebuffs in the late

1970s. For new projects within the company, Simpson points with some pride to its new multi-state system Power Stations.

Gould will be on the look-out for software companies working in Unix and on 32-bit architecture, preferably in a particular segment of industry.

## DOWNTIME

## Fame pulls in riches

FAMOUS people are much in demand to do the honours at official openings. Only the other day, Syntex was honoured by a royal scissor-wielder.

It was none other than Princess Anne who opened Syntex's new £20 million Leeds HQ, and, coincidence of coincidences, when La Phillips tried her hand at a lottery terminal, she won £1,000.

Quick thinking on the part of vice-chairman John Gow was required. What could be done with the unexpected windfall? Luckily, he just happened to have a cheque for £1,000 about his person already made out to the St John Ambulance Brigade.

Should you be thinking of renting a celebrity to open your new Fortakabob in Bingley, I can inform you that there's a three-year waiting list for Charles and

Di, whereas you can get Anne pretty quickly.

And for the price of a packet of wine gums, you can have me.

## Make war games not war

WHILE lousy pinko subversives protest about the increasing use of computers in warfare, the Canadians are replacing war with computers. It would appear that the men in woolly hats and check shirts are so impoverished, when it comes to buying guns and bombs that they can only afford one real war game a year.

At the risk of being inundated with white feathers, might I be bold as to venture that we support Reagan, Thatcher and whoever generic Russia is this week, who Apple II micros, Operation Rapid Thrust can for 24 hours over a

weekend (with the war being stopped at bedtime each night) you will no doubt be pleased to learn that the Canadians only lost 450 men, whilst killing a hell of 650 simulated bad guys.

Chad

LiveWare File  
by Don

"MORE SELF-CERTIFICATION FORMS...  
"ACUTE CORYZA WITH FEBRILE EPISODES"  
"EITHER WILL OR THY POTOKOS!"

"WHO GAVE THEM ACCESS TO OUR NEW EXPERT SYSTEM?"  
"FIVE FINGER TEST"  
"FINGER TEST"  
"FINGER TEST"  
"FINGER TEST"

"WHY ARE YOU DOING THIS?"  
"I DON'T WANT TO GET YOU IN TROUBLE!"  
"I DON'T WANT TO GET YOU IN TROUBLE!"  
"I DON'T WANT TO GET YOU IN TROUBLE!"  
"I DON'T WANT TO GET YOU IN TROUBLE!"

"I DON'T WANT TO GET YOU IN TROUBLE!"  
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"I DON'T WANT TO GET YOU IN TROUBLE!"

Chad

## LETTERS

## ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, July 14, 1983

The lesson for Leyland

## The pain of SSP

YOUR correspondent Cliff Dillaway takes great pains to draw distinctions between a practical view of SSP and a legalistic view of SSP (Letters, June 16).

The net result is that he provides some useful explanations as to why we are receiving queries by the score about SSP and payroll administration difficulties.

However, I was a little surprised and dismayed at the unsupported endorsement the article appeared to give to AMAPS, and the fact that the author seemed to miss the most outstanding conclusions from his PAYE.

While AMAPS may well be reasonable software and the techniques of MRP II may be of value to a manufacturer, it was clear from the article that AMAPS and MRP II were not yet installed or being used at Leyland, unfortunately despite the headline around the article. Mike Waller, the author, gave us no insight into the special value of the package or the technique of MRP II.

It is clear from many manufacturers' experiences that the techniques of MRP represented in both packages (MAS, Copic, Mapic) to name but a few of the major ones on the market) and in-house written software have given tremendous benefits to the users in terms of reduced inventory and increased control of all aspects of the production process.

They went because the United States was where their work was appreciated. There industry was putting its efforts into research and Oakley was too polite to tell the industrial section of his audience that the reason that foreign companies could lift British ideas was simply that they were quicker and smarter.

Highly successful companies such as Gould, Prime and Comptervision have come shopping for the UK's computer-aided design and manufacturing expertise. And they have bought almost all of it that wasn't nailed down. Gould, indeed, is still looking.

These British companies were all ones that were doing reasonably well, but could do better with more resources behind them. They had been languishing on the doorsteps of UK industry for years to little avail.

The private UK finance house Investors in Industry, formerly Finance for Industry, last week also issued a call to its fellows to pay attention to what UK academics are doing and are capable of.

The call cannot be made too often it would seem. The fact is that UK attitudes to manufacturing are in general more positive and productive than in the UK. Although many believe the Japanese have some unique abilities in this area it is true that techniques used successfully in Japan were developed in the US and are not a fault inherent in the software but in user attitude. Education and enthusiasm since the start of their new project has enabled them to say, "even before AMAPS we've taken £7 million out of inventory", and presumably that saving was made using their old MRP system.

A second factor of interest is that it required a visit to the US to spark off this enthusiasm. It is a fact that US attitudes to manufacturing are in general more positive and productive than in the UK. Although many believe the Japanese have some unique abilities in this area it is true that techniques used successfully in Japan were developed in the US and are not a fault inherent in the software but in user attitude.

It is almost sad that a company like Leyland, like many other British manufacturers, has had techniques developed in the US in the 1950s and 1960s available to them for nearly 20 years before they learn to reap the benefits.

To return to the article, AMAPS and MRP II (as opposed to MRP) may or may not hold great benefits for Leyland Trucks. This is not shown either way, and it seems too early to assess what has been gained by the company tremendously – and here I guess Comsver doesn't win praise (as well as sales) – is its user education programme.

Having worked on the above-mentioned Lisp/Prolog system for some time now I see a bright future for the language – solving problems too hard to be solved in Pascal.

Dr DAVID BAILEY  
University of Salford.

PAUL MYERSCOUGH  
London NW3.

PROFESSOR COLIN is of course right to point out that the Tower of Hanol problem can be solved as easily in Pascal as in Prolog. However, the latter half of his letter is grossly unfair to Prolog. Prolog (and Lisp) excel with problems involving complex data structures – such as algebraic manipulation programs, natural language understanding programs, etc. Unfortunately such programs are too big to explain in a magazine article.

Several systems now exist (such as BSL) which are fast becoming a pre-requisite to growth and profitability in the computer industry. The problem is that the cost of developing a system to meet our needs has been decreasing, but the price of meeting every conceivable requirement is increasing. And we've recently added to our already existing requirements the need for systems which offer even greater efficiency and flexibility of use.

Product and customer support is the backbone of our success and all BSL packages carry a three-month warranty as well as round the clock backup service. We also produce non-standard software, either to your exact specification or pre-programmed, by the following methods: 1. In-house development; 2. Commissioning a company to do it; 3. Purchasing off-the-shelf packages which perform only many business requirements and a cost that will bring the advantage of the more advanced computer within your reach.

If you would like further information on any of our standard software packages or would like to discuss specific requirements, or more detail, please contact us today.

We must be "practical" as recommended by our grown-up professional advisors: rules are made to be broken; fines are there to be paid; prisons are there to be filled; and employee rights are given to be withheld.

I do not wish to be accused of being purist. Nor do I wish to add fuel to any disagreements. But, when Dillaway recommends that comparison should be made between the "practical" operation of PAYE, NI and payroll, and the "strict rules" that govern this, does he suggest that the "shock" that will be felt should encourage employers to comply with SSP rules or break them?

If it is the former, then what is the point of Dillaway's letter and why does he try and draw distinctions between practical and legalistic views of SSP?

If it is the latter, then the questions are raised as to whether Dillaway is fit to be giving advice to employers, and whether the 3,000 or so buyers of his kits of forms will represent the majority of SSP users in the first two or three years of the new scheme.

L. C. WHITAKER  
Secretary Editorial Board  
Payroll Magazine  
Ross-on-Wye  
Herefordshire.

## Meccano can teach ICL

I SEE that your readers include Meccano enthusiasts who can identify with recent advertising (Computer Weekly, June 9). The absence of nuts and bolts pointed out by Roger Wallis may indeed be a Freudian slip by ICL.

Personally I am convinced that nuts and bolts were the cause of Meccano's eventual and much lamented demise. Real Meccano had cheese head bolts and square nuts. New Meccano had round head bolts and hexagonal nuts. This subtle change may have saved brass (no pun intended) but it also made it almost impossible for anyone with less than three hands to work with.

How do you hold a small round headed screw straight between thumb and forefinger?

Let's hope ICL learns from Meccano's mistake.

J. N. CHAPPLE  
London SW1.

The Editor welcomes letters concerning on subjects published in Computer Weekly, or on original topics. All letters must be accompanied by the writer's name and address, not necessarily for publication.

## Especially for Unix based Systems

## BSL

In most progressive operations, the use of computerised systems is fast becoming a pre-requisite to growth and profitability. The considerable range of equipment available to us at BSL, from basic desktop systems capable of meeting every conceivable requirement, to complex, high-speed, real-time systems, is designed to offer a wide range of facilities and flexibility of use.

Product and customer support is the backbone of our success and all BSL packages carry a three-month warranty as well as round the clock backup service. We also produce non-standard software, either to your exact specification or pre-programmed, by the following methods: 1. In-house development; 2. Commissioning a company to do it; 3. Purchasing off-the-shelf packages which perform only many business requirements and a cost that will bring the advantage of the more advanced computer within your reach.

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# Cobol law proposal hits a hitch

PROPOSALS to settle the next key issue in Cobol are causing concern among some members of the British Computer Society. The issue is screen handling, and concern focuses on a proposal just submitted to Codasyl, which is to Cobol what the House of Commons is to British law.

The proposal attempts to define how screen handling should be implemented and linked into Cobol at a time when many companies are going it alone with their own software. Micro Focus, for example, has a product called Forms 2 for screen handling.

The view of most of the BCS Cobol Specialist Group is that the proposals are too biased towards mainframe users who enter whole screens of data at a time and then press a return key to file the information.

On micros, it is possible to enter data one item at a time. When running order entry, it is then possible to input an account number and have it checked on the database of customers before filling in the details.

"Users of micros who have this kind of interaction would not be happy with the new proposals," says Tony Sale, of the BCS Specialist Group.



Finch helps the three young Norwich winners to hold aloft their trophy.

## Top of form in technology

A SCHOOL team from Norwich has won the first national QUIZ IT, with a formidable display of all-round computing knowledge. Three boys from Thorpe St Andrews School beat Portsmouth Grammar School to the £1,000 first prize in the final in Liverpool. Questions were fired by BBC TV's *Tomorrow's World* presenter Michael Rodd, and the trophy was presented by Bob Finch, managing director of the competition

sponsor, Computing Technology. Several hundred school teams of O-level students, aged 14 to 17, have been competing this year for the prize in regional and inter-regional rounds, organised by the British Computer Society. The six regional winners turned up at Liverpool for the semi-finals, and the final was held immediately afterwards.

I was given some of the questions to flex my wasted wits, and

not one did I answer correctly. Here are two of them:

Q: A parent that helps to cure a bad back?

A: A Motherboard.

Q: Passes without pretence?

A: Real time.

With cryptic questions like these, the Norwich school did well to score 85 out of 100 in the final, with Portsmouth trailing at 77.

## Mics for the masses – minus the jargon

BBC PRESENTER Brian Redhead is already famous for his television series which tried to bring the micro to the business masses.

He has now chosen to exploit his talent for jargon-free exposition with the launch of a video called The Micro-Computer in co-operation with BBC Radio 4 producer Trevor Taylor, and the National Computing Centre.

The aim is to make the micro palatable to a larger audience, enthuses Redhead. The introductory video includes an exhortation to buy existing software packages rather than try to reinvent the abacus.

David Fairbairn, managing director of the National Computing Centre, also features prominently on the video, and urges people to consider using program generators rather than doing their own thing in Basic.

Redhead adds that one aim of the program is to coerce potential buyers to seek advice from the NCC's own service.

Watching his own video almost

a year after it was filmed, Redhead wished that producer Taylor had made him restrain his flamboyant mannerisms a little. But he does at least succeed in breathing a little life into the unexciting looking plastic boxes.

"The Micro-Computer" costs £29.90 plus £1.75 carriage and insurance from Double Tee Productions of London.

the introductory video to what promises to be a refreshingly down-to-earth series include "software", "byte" and "floppy".

Future video in the series will cover more specialist topics like database software, word processing and accounting.

A later series may introduce sophisticated notions like networking.

The emphasis will be on software, insists Redhead. The introductory video includes an exhortation to buy existing software packages rather than try to reinvent the abacus.

"The Micro-Computer" costs £29.90 plus £1.75 carriage and insurance from Double Tee Productions of London.

## PEOPLE

### A system to put the expert at ease

MANY in the industry seem to have to be quite jaded to be quite jaded. Michael Michie hopes that his

team will prove just as

agile as jaded.

Expert-Ease is a system that allows experts to draw conclusions given a base of knowledge. It is to generate rules for application.

This is done by first

system of a

medicine, it might be

temperature, blood pres-

sure, age and birth, for ex-

ample.

Then the expert

applies to

for precise rules to draw

conclusions.

Michie says expert

describe exactly what

they are doing. But they can

what attributes they

for – if they can't

use either quarks or chak-

rales.

Sometimes the expert

think a particular sub-

ject is important when it is

not.

Michie

... Expert

describe just what they

do.

Redhead adds that one aim of

the program is to coerce potential

buyers to seek advice from the

NCC's own service.

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insurance from Double Tee Produc-

tions of London.

■ Alimand Computer Systems, the City-based software house and consultancy, has appointed Roger Dimmick as marketing and sales manager. Dimmick, formerly a banking consultant with CMG, will initially concentrate on expanding the client base for Alimand's specialised services and products in the banking and financial sectors.

■ Bryan Mills has been appointed a non-executive director of the newly formed company FI Services. He will look closely at overall marketing and sales strategies. He was previously the chairman and co-founder of Computer Management Group. Mary Anne Feerick has been appointed chief executive officer of F International (USA), based in New York State, and will be responsible for developing its client base on the East Coast of America. Dr Kit Grindley (above) as sales manager. She will be responsible for spearheading expansion into new markets in the southern counties. She joins Oxford Software after a career in sales support at Versatec Electronics, where she spent five years.

■ Prime Computer (UK) has made Richard Forrester engineering manager for its City district. He will be responsible for providing engineering support for all Prime installations in an area

including the City of London, south Essex, Kent and Surrey. He joined Prime 11 months ago as branch field engineering manager for the South-west branch of Prime's City district.

■ John Eales has been appointed marketing manager of Gothic Crelton, the new company name for Thorn EMI's extensive electronic components and microsystems distribution operation. He has joined the company from Abacus Electronics, where he was marketing and operations manager.

■ Robert Allerton has been appointed branch manager for the western branch of Rediffusion Computers, based in Bristol. He joined the company in 1979 as territory manager for the northern branch and was appointed area sales manager in 1981.

■ Jacques G Maisonneuve, IBM senior vice-president, has been elected to the board of directors of International Business Machines Corporation. He continues as chairman, IBM World Trade Corporation, member of the Corporate Management Board and the Business Operations Committee and Member of the board of the IBM World Trade Europe/Middle East/Africa Corporation.

■ Geoffrey Finlay has recently joined the IBM specialist software house, Insight Database Systems, as marketing director. He was formerly international manager with the McCormack and Dodge Corporation.

■ Micom-Borer of Rendlesham has appointed a new sales executive in the City. Bill Jenkins will be responsible for sales of the entire Micom-Borer range of low, medium and high speed data communications devices. He has worked for Thorn EMI, where he was on the North London sales team selling PAX Systems, pocket paging devices and public address systems, and as a sales executive for Infotron, keyboards.

■ Terry McIntyre (above) has been appointed keyboard sales manager of McMurdo with responsibility for the marketing of keyboard products under the recently announced joint venture agreement between McMurdo and Orcom. He will liaise closely with the US-based Orcom Company. McIntyre comes from ITW Electronics Europa, where he was selling PAX Systems, pocket paging devices and public address systems, and as a sales executive for Infotron.

■ Sintrom Electronics has promoted Chris King (above) to product manager for the company. He will be responsible for the sales of the company's range of plotters and digitisers from Houston Instruments, the Polaroid videoprinter hardware and the new graphics controllers from Raster Technologies. He joined Sintrom nine months ago as product specialist for the company's Hewlett-Packard division.

■ THE fifth International Conference on Boundary Elements is to be held in Hiroshima, Japan, from November 8-11. Topics covered will include numerical techniques and mathematical principles; linear/nonlinear structural mechanics; fluid flow problems; mass and heat transfer problems; geomechanics; electric/magnetic field problems; coupling of boundary element/finite element methods; stochastic systems; and industrial applications. For further information contact Conference Secretariat, Computational Mechanics Centre, Ahurst Lodge, Ahurst, Southampton SO4 2AA. Tel: (0423) 3223.

■ CALL for papers has been issued for the second Worldwide Congress on Computer and Communications Security and Protection, Securicom 84, exhibition, which March 2-1984 in the New Palais des Festivals et des Congrès of Cannes, France. The main topics will be jurisdictional problems created by the introduction of data processing; computer fraud; logical security and privacy; risk analysis and disaster recovery planning; and computer auditing. Potential contributors are invited to send five copies of their paper before August 31, 1983 to Securicom 84, SEDEP, 8 rue de la Michodière, 75002 Paris, France. Tel: (1) 7424100.

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British Telecom – who else? Look for our ad on page 35

CROSS ROADS DANGER

Each letter represents a digit. See page 55 for more.

DATA PROCESSING

British Telecom

.. It's all in the CASE book

■ Ian Tong (below) and Robert Stichbury have joined Oyez Computers, a subsidiary of the Solicitors' Law Stationery, where they will be responsible for selling in-house computer systems for legal accounting and other business requirements. Tong will cover West and North-west London and the Home Counties. His previous experience includes salesman for medical products for consultant anaesthetists and product manager for a hand-made crystal glass company. Stichbury will concentrate on East Anglia, East and North London. He was previously involved in selling computer-based financial systems.

■ Bryan Mills has been appointed a non-executive director of the newly formed company FI Services. He will look closely at overall marketing and sales strategies.

He was previously the chairman and co-founder of Computer Management Group. Mary Anne Feerick has been appointed chief executive officer of F International (USA), based in New York State, and will be responsible for developing its client base on the East Coast of America. Dr Kit Grindley (above) as sales manager. She will be responsible for spearheading expansion into new markets in the southern counties. She joins Oxford Software after a career in sales support at Versatec Electronics, where she spent five years.

■ Prime Computer (UK) has made Richard Forrester engineering manager for its City district. He will be responsible for providing engineering support for all Prime installations in an area

including the City of London, south Essex, Kent and Surrey. He joined Prime 11 months ago as branch field engineering manager for the South-west branch of Prime's City district.

■ John Eales has been appointed marketing manager of Gothic Crelton, the new company name for Thorn EMI's extensive electronic components and microsystems distribution operation. He has joined the company from Abacus Electronics, where he was marketing and operations manager.

■ Robert Allerton has been appointed branch manager for the western branch of Rediffusion Computers, based in Bristol. He joined the company in 1979 as territory manager for the northern branch and was appointed area sales manager in 1981.

■ Jacques G Maisonneuve, IBM senior vice-president, has been elected to the board of directors of International Business Machines Corporation. He continues as chairman, IBM World Trade Corporation, member of the Corporate Management Board and the Business Operations Committee and Member of the board of the IBM World Trade Europe/Middle East/Africa Corporation.

■ Geoffrey Finlay has recently joined the IBM specialist software house, Insight Database Systems, as marketing director. He was formerly international manager with the McCormack and Dodge Corporation.

■ Micom-Borer of Rendlesham has appointed a new sales executive in the City. Bill Jenkins will be responsible for sales of the entire Micom-Borer range of low, medium and high speed data communications devices. He has worked for Thorn EMI, where he was on the North London sales team selling PAX Systems, pocket paging devices and public address systems, and as a sales executive for Infotron, keyboards.

■ Terry McIntyre (above) has been appointed keyboard sales manager of McMurdo with responsibility for the marketing of keyboard products under the recently announced joint venture agreement between McMurdo and Orcom. He joins Sintrom Electronics from ITW Electronics Europa, where he was selling PAX Systems, pocket paging devices and public address systems, and as a sales executive for Infotron.

■ Sintrom Electronics has promoted Chris King (above) to product manager for the company. He will be responsible for the sales of the company's range of plotters and digitisers from Houston Instruments, the Polaroid videoprinter hardware and the new graphics controllers from Raster Technologies. He joined Sintrom nine months ago as product specialist for the company's Hewlett-Packard division.

■ The fifth International Conference on Boundary Elements is to be held in Hiroshima, Japan, from November 8-11. Topics covered will include numerical techniques and mathematical principles; linear/nonlinear structural mechanics; fluid flow problems; mass and heat transfer problems; geomechanics; electric/magnetic field problems; coupling of boundary element/finite element methods; stochastic systems; and industrial applications. For further information contact Conference Secretariat, Computational Mechanics Centre, Ahurst Lodge, Ahurst, Southampton SO4 2AA. Tel: (0423) 3223.

■ CALL for papers has been issued for the second Worldwide Congress on Computer and Communications Security and Protection, Securicom 84, exhibition, which March 2-1984 in the New Palais des Festivals et des Congrès of Cannes, France. The main topics will be jurisdictional problems created by the introduction of data processing; computer fraud; logical security and privacy; risk analysis and disaster recovery planning; and computer auditing. Potential contributors are invited to send five copies of their paper before August 31, 1983 to Securicom 84, SEDEP, 8 rue de la Michodière, 75002 Paris, France. Tel: (1) 7424100.

■ Ian Tong (below) and Robert Stichbury have joined Oyez Computers, a subsidiary of the Solicitors' Law Stationery, where they will be responsible for selling in-house computer systems for legal accounting and other business requirements. Tong will cover West and North-west London and the Home Counties. His previous experience includes salesman for medical products for consultant anaesthetists and product manager for a hand-made crystal glass company. Stichbury will concentrate on East Anglia, East and North London. He was previously involved in selling computer-based financial systems.

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## BOOKS

# Second silicon revolution will aid third world

The Wealth of Information, Tom Stonier, Thames/Methuen (1983). £4.95.

JUST AS J. K. Galbraith's *The Affluent Society* defined the agenda for economic debate in the 1960s, and E. F. Schumacher's *Small is Beautiful* set the tone of the 1970s, so Tom Stonier's thought-provoking little book may well turn out to be a seminal work of the 1980s.

In short, it is a minor classic, though Stonier is not in the same league as his heroes, Adam Smith and John Maynard Keynes.

His main thesis is simple: information adds value. The accumulation of information is as important today as the accumulation of capital, and becoming more so. Knowledge can convert deserts into fertile croplands.

Even machinery is more than just muscle-power in metal. Each machine embodies within itself an intellectual history of invention and discovery. And of course one machine stands pre-eminent in the information economy — the computer.

As the necessity for physical labour continues to decline, we are fast becoming a nation of programmers and information technologists.

More interesting is Stonier's forecast of a second silicon revolution — based on the photo-voltaic cell (close cousin of the transistor) which promises cheap, clean solar energy for the Third World.

Most of the world's poorer countries are blessed with abundant sunlight, and their economies would be transformed by such an energy source.

From megabytes to megawatts! Silicon, one of the commonest elements on earth, is more precious than gold; and the alchemical ingredient that turns sand into riches is knowledge. Once we recognise the value of knowledge, we will have to re-write economics, for as Stonier says: "Information is a resource which can be truly shared."

When I tell you something, I do not thereby diminish my own store of information. Indeed, most find that the attempt to impart information often enriches the teller's knowledge.

Thus while competition is the norm for land, material goods etc, co-operation is, or should be, the normal mode of information exchange. As we move into an age where information technology supplants manufacturing as the dominant source of wealth there are grounds for hope that this fact may rescue mankind from the excesses of competitiveness.

We have just witnessed an election campaign full of calls for Victorian values and other outdated remedies. Our leading politicians display a poverty of ignorance about the wealth of information. All that I can say is that the authors set out to tell the timorous beginner how to organise the classroom and children, about the different purposes a micro can serve, and how to make good educational use of electronic toys.

This is achieved using admirably plain language. The jargon so beloved of those in the know is explained in a clear and precise manner so that even I would feel confident to use terms such as domain of expertise and bit pad.

Plenty of ideas for the development of systems are suggested, and the appendices form a comprehensive list of further sources of information.

The photographs are useful in assisting the novice to identify pieces of equipment and in showing what selected programs look like on the VDU. I was not so



No longer any cause to dread the arrival of the school's first micro.

## How to organise children for the school's first micro

Micros in Early Education. Pamela Fiddy & David Wharry, Longman. £2.25.

JUST what I've been waiting for — a guide to using micros in the classroom. As a teacher with no knowledge of computers, and faced with the prospect of using one in my classroom in the near future, I found this book informative and, more importantly, extremely encouraging.

The authors set out to tell the timorous beginner how to organise the classroom and children, about the different purposes a micro can serve, and how to make good educational use of electronic toys.

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impressed with the cartoon-style illustrations however.

In the first chapter we see the enthusiastic wild-eyed woman teacher using a micro with a class of children, but by the time we reach chapter three who is shown writing the programs and doing the technical things? A man of course.

Microcomputers in Early Education is a practical and basic guide for the complete beginner. After reading it, I actually began to look forward to the delivery of the micro, rather than dreading it.

Christine Penfold

## Computer lift-off for the beginner

Computers Today. Donald H. Sanders. McGraw-Hill. £19.95.

THERE is always a need for comprehensive, up-to-date and easy-to-digest guides to the whole computer world.

The demand is from businessmen wanting to learn about computers, from computer industry trainees, and from experienced analysts/programmers specialising in one system or one language who want an overview of their industry.

All these categories are catered for in Sanders' remarkably unctuous 669-page guide. The book works because the lavish use of colour, lucid diagrams and careful layout provide maximum visual impact.

Sanders has written this to be a textbook for computer literacy, so that when the reader has finished he will understand the principles of what computers are, what they do, how they work and their social impact.

John Riley

No other application changes so consistently from so many sources: government intervention, company/corporate policy intervention, DHSS/Inland Revenue and union intervention, new bank requirements, and so on.

So while Basic is the easiest language to learn, it is harder to master to use well. By March's own argument, that is not a bad thing.

The book is worth reading in its own right as an introduction to software that can be used for personal computers.

The reader will certainly end with a solid knowledge of Basic and will brush with most of other languages commonly countered on micros.

Philip Hunt

established and proficient software department, the tendency is to employ it in projects that provide a return on investment.

Thirdly, payroll makes heavy demands upon system maintenance. Although many companies start by writing their own in-house system (because it is fairly simple), they eventually buy or rent a package (because maintaining the system is lengthy, expensive, and simply boring).

"In addition," claims director Tim Borthwick, "it is used by other DEC OEMs and systems houses who wish to provide their customers with a tried and tested payroll system."

No other application changes so consistently from so many sources: government intervention, company/corporate policy intervention, DHSS/Inland Revenue and union intervention, new bank requirements, and so on.

And to compound such matters, all these amendments are usually geared around one particular month of the year. Asked what were his major problems, one local government finance/DP manager replied simply: "April".

Finally, payroll is a popular package by virtue of a sound marketing policy on the part of the vendors. Not only is it something that every company with more than just a few employees must have, it falls within the jurisdiction of the man with the finance company purse strings: the finance company.

At the moment, software development methods differ widely so that standardised measures are impractical. Automobile engineering would have been at a similar stage early this century.

There is no person better suited

to CMG's central bureau mainframe computer. It is also available for outright purchase as a package to run on most micros with CP/M.

In the short term, the question must be asked: will the microcomputer, with megabyte main storage, 30 megabyte Winchester backings, and 16- and 32-bit processors impact on the mid-mainframe market?

Chris Harrison, managing director of CMG, agrees that the use of

grate payroll into their corporate accounting routines, with the result that they have to interface into bigger mini and mainframe systems?

suppliers suggest, on the contrary, that the micro is incapable of handling payroll in any meaningful manner.

Tim Southern, managing director of PPL-Cyborg Ltd, holds this latter view. "Most of our clients have payrolls in excess of 2,000 employees, and existing microcomputer systems are just not fast enough to handle volumes of this size within the production time available.

Nevertheless, the impact of the microcomputer will surely be felt sooner or later. One interesting new approach is that of CMG (Computer Management Group).

Earlier this year, the company launched its Statutory Sick Pay (SSP) system based on the Teletext microcomputer, and linked

micros as intelligent terminals will undoubtedly grow. In this way, the micro adds to the scope and flexibility of mainframe applications.

The CMG MicroSSP System handles SSP administration locally, but also gives the option of transmitting relevant information via telephone line to a central mainframe.

"This combination of local processing with the large storage and power of central mainframes through a bureau service is of particular relevance to the user who wants continued customer support rather than just hardware and software."

"Furthermore," he continued, "larger organisations need to integrate payroll into their corporate accounting routines, with the result that they have to interface into bigger mini and mainframe systems?"

micros as intelligent terminals will undoubtedly grow. In this way, the micro adds to the scope and flexibility of mainframe applications.

"These results can then be fed automatically to another computer, or internally to the payroll program within TMS for final pay processing."

"We foresee," he went on, "a greater integration of payroll with other company control systems. TMS enables the real time link between individual personnel behaviour and pay reward, giving management a facility to differentiate between individual performance, and enabling efficient workforce deployment. It is a sig-

# SOFTWARE MONTH

## Why payroll packages are now worth a packet of money

### Should Basic be quietly lost?

Computer Languages and Their Uses. Gary Marshall, Gmc Publishing. £5.95. ONCE a computer language established for a particular application or type of machine, that amount of flak from the press seems capable of dislodging.

Fortran and Cobol have come in for ridicule from the press, yet one remains the language of the scientific community, the other is actually increasing, held over commercial dominance.

Marshall's book is a gentle, thorough demolition job on Fortran. He begins with the alternatives: small micros, such as Pico, Comal and Forth, which are structured; or Prolog and which are more suitable for particular applications.

Marshall then develops a

program, and gives alternative versions in other languages for the same application. Each concludes with reasons for preferring languages other than Fortran: preference in Prolog; for real simulation, Comal; while for graphics, it is Lisp.

For three dimensional graphics, Marshall exhorts something

not really a language at all: a suite of Fortran programs to be used with Gino-F, which is a way of drawing graphs, independent of the early computers.

There are many reasons for this.

In the first place, payroll requirements are very well defined in a way that lends itself to the batch capabilities of the early computers.

In the second place, a major reason for the predominance of packaged payroll is one of corporate disinterest. It is, to say the least, non-profit making. Indeed, it is simply one of those necessary evils that must be tolerated gracefully.

Fair point. But not all our

Fortran, so Gino-F is not that portable either.

I finished this book with a favourable impression of it.

Marshall had unwittingly demonstrated how versatile the language is, capable of use for almost any application. Some of the other languages used are more limited.

He admits that sophisticated graphics can be drawn with commands added to the language. In software to draw these graphics, it is not run on other micros with different graphics commands.

One of the strongest arguments for using a bureau is that of confidentiality. Many companies place great store on paying their employees according to their worth rather than within the rigid pay scales of length of service and predefined hierarchical grades.

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## SOFTWARE MONTH

One software house claims to calculate 20% of UK pay packets. If the claim is true, Peterborough Software rules the payroll package market

# Payroll has paid off for Peterborough

**PETERBOROUGH** Software claims to be the supplier of the software that calculates 20% of the working population of the UK.

This is a phenomenal success when considered with the findings of a recent independently conducted survey among *The Times* Top 100 companies. This indicated that the majority of companies actually use in-house software.

It means, if corroborated, that Peterborough completely dominates the packaged payroll market.

John Mills, the managing director and driving force behind

Peterborough Software, is happy to substantiate the claim.

"We have," he says, "a more up to date database of IBM mainframe installations than even the *Computer Users' Yearbook*. We know what company has which hardware; and perhaps more to the point, who uses what software. We are thus able to plan our sales targets to a fine degree of accuracy."

It is this attention to detail that has taken the company from a bureau without its own computer in 1963 to an international software house with a UK staff of about 180 and ambitious foreign plans, in just 20 years.

And the company has done this mainly on the strength of its payroll package, Unipay, and the associated Unipension and Unipersonnel packages.

It is not often that an independent company can be as successful on the strength of such a narrow product range as Peterborough clearly has been, and this is perhaps a reflection of the unique nature of payroll software. "It is simply a drain on resources," says Mills.

"But it is also an emotive and highly political thing. It's a non-profit making, but you must nevertheless do it right - because

if it goes wrong, it could well lead to a strike!"

Mills believes the current success of Peterborough is rooted deep in its past. As a bureau, it had discovered that a number of companies were interested in payroll software. So when the company turned software house, the package it first produced was Unipay.

However, unlike many other packages that are really developed for a single customer and then generalised for the market, Unipay was designed around basic concepts from the start, in a modular fashion that would provide a package as near as possible able to provide all the requirements of all users.

"These basic concepts have stood the test of time," claims Mills. "They are fundamentally, although changed to reflect legislative changes, the same today as they were 15 years ago.

"What is more, payroll principles are remarkably international. All governments want to find the best method of taking money from the people; and PAYE is one of the best methods devised. It is a basic system used in a lot of different countries."

Nevertheless, trade was slow in the first few years. Packaged soft-



Payroll is part of a larger application: human resource management.

ware had developed a bad reputation: it was something that gave three months support and then left the user to his own devices.

But then, as always in the history of hardware and software, IBM took a decisive step and unbundled its software in 1971. At around the same time, the UK's coinage converted to the decimal system, and for a while things improved for payroll vendors.

But another lull in software sales set in and threatened many of the leading companies SPL and CAP, for example, virtually halved their staff levels overnight.

Software, and particularly mainframe software, is a labour-intensive industry with low-turnover, high-cost products. This type of industry is particularly susceptible to cashflow problems: a few sales the wrong side of the break-even level is the difference between expansion and contraction.

Mills looked at the problem and decided to try rental. "It has nothing new," he said. "The ground rules had already been laid by IBM's rental agreements. It allowed DP managers to get more software on the same budgets."

"Most DP managers had, and still have, unlimited revenue, very limited capital budgets."

It's a variation on the old notion of being able to hire a mainframe but not buy a micro!

But there are other considerations of equal importance.

"People who buy software do

because they don't wish to support it. Payroll has the highest maintenance load of any software, than perhaps operating systems. There are usually four or five legislative changes each year - it's all they all centre around April's Statutory Sick Pay (SSP), for example. One such change that everybody underestimated. With a predictable rental cashflow, Peterborough is able to provide a highly supportive software support service."

The result was a very difficult first few years. Rental is after all a method of financing the buy. But once the first years had been survived, a stable and predictable income enabled Mills to plan for the future.

This future revolved around

growing realisation in the UK and North America during the 70s that payroll is really only part of a larger application: human resource management, comprising payroll, personnel and pensions. It became the vogue to talk of the global corporate database within which human resource management would figure prominently.

The third, Unipension, soon followed in response to the 1975 Social Security Pensions Act.

By 1981, all Peterborough software was revamped to provide both online and interactive facilities, but retaining the option for batch processing if required.

For the future, Mills now sees total integration across the mainframe systems. "Not the lip service we currently have. It will be a full database system with English language enquiry facilities and better reporting. The all-singing corporate database is not and never will be feasible; but we see the world as a series of databases, one of which is a people database, payroll, pensions and personnel."

"Since all three departments

and should therefore run in tandem. This was the approach adopted by Peterborough. By 1976, Peterborough had two parts of the human resource trio - Unipay and Unipersonnel - two separate products that could act as one with shared data.

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The third, Unipension, soon followed in response to the 1975 Social Security Pensions Act.

By 1981, all Peterborough software was revamped to provide both online and interactive facilities, but retaining the option for batch processing if required.

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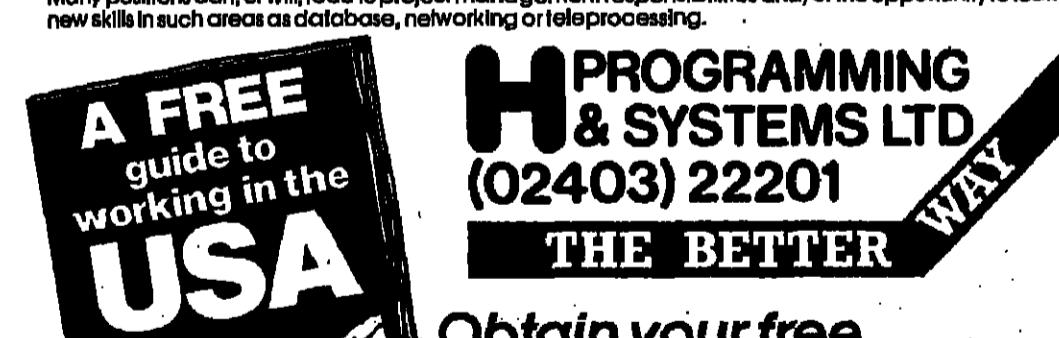
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Associates Limited**

International Personnel Consultants  
15 Clarence Street, Slaines, Middlesex TW18 4SU  
Telephone: Slaines (0784) 59247. Telex: 881414

**Systems Manager**

Here's your chance to join a major International Company

Salary: In excess of £15,500

West London based

A leading International Company of outstanding repute urgently seeks a highly professional Systems Manager, to be part of their expanding group in West London, although travel abroad to Europe will be necessary.

The task is a challenging and responsible one and requires someone who is capable of working under pressure and making the right, important decisions.

The successful candidate, ideally aged over 27 years, must have worked as a Programmer, through to Business Systems Analyst and be proficient in the following areas: COBOL, Programming, General application packages, Project management, Comprehensive system development methodologies, Analysing of business systems, Data communications and Communications with users and senior management.

A salary in excess of £15,500, plus the usual benefits package is offered. For further information about this vacancy, either telephone Steven Knowles-Baker, on 01-370 2012/3 or send a brief c.v. to him at N.K.B. Associates Limited, 159A Gloucester Road, London SW7 4TH. All enquiries will be treated in the strictest of confidence.

(4028)

The Computer Specialists... Placing Computer Specialists

## OPERATORS IBM VM/CMS OPERATORS

£9,000++

## ★ CAREER OPPORTUNITIES

## ★ 22 DAYS' HOLIDAYS

## ★ SPORTS AND SOCIAL CLUB

Two vacancies currently exist within this leading manufacturing organisation based in London. Our client requires ambitious, senior operations professionals with a minimum of two years' experience. Duties will include the utilisation of a large on-line system. These positions would suit candidates willing to expand their computer knowledge as the company offers excellent career opportunities.

## PDP RSTS/E OPERATOR c £8,000

## ★ JOB SECURITY

## ★ FREE LIFE ASSURANCE

## ★ CAREER PROSPECTS

Due to promotion this rapidly expanding site requires an enthusiastic, competent Computer Operator with a minimum of 18 months' RSTS/E experience. Excellent opportunity for career development. Benefits include free life assurance, medical insurance, luncheon vouchers and profit share scheme.

## VAX VMS OPERATORS c £7,800

## ★ EXPANDING SITE

## ★ GENUINE CAREER PATH

## ★ EXCELLENT WORKING CONDITIONS

This rapidly expanding highly successful advertising company, are seeking to recruit enthusiastic, career minded DEC operators, with a minimum of 12 months' experience. VMS exposure not essential but would be a distinct advantage. Company offers excellent career path with excellent working conditions.

DEC/PDP/VAX  
OPERATORS

c £8,000

We have many requirements for a selection of DEC operators for some of the fastest growing computer companies based in London and the Home Counties.

object

242 9796

computer recruitment limited 15 Red Lion Square London WC1R 4QH. Telephone: 01-242 9796

## SYSTEMS MANAGER/PROGRAMMER

BEDS C.£8-11K + CAR

International Company situated in rural Beds. are seeking a Systems Programmer to be responsible for technical support functions. The candidates will have an extensive DEC, PDP background under RSTS/E using BASIC + some FORTRAN and MACRO experience.

## HEALTH CARE/MUMPS SALES SUPPORT

BEDS 10-£13K + CAR

Leading European Software House with offices in UK, Europe and the Middle East are seeking an A/P with experience of Health Care Systems using MUMPS on DEC Hardware. Experience of Radiology and laboratory administration is advantageous.

## IBM PROGRAMMER

HERTS £7-9K

Our client, a market leader is seeking an IBM Programmer with experience of DOS/VSE Batch and on-line work. Candidates will be part of a small team working primarily on stock control systems.

## SENIOR ANALYST

HERTS £15K

Successful and expanding bureau are seeking a general commercial Analyst with at least five years' solid experience of systems. Candidates will have taken definite advantage.

## PROGRAMMER ANALYST

HERTS £12K

A leading manufacturer of domestic products utilising twin 34s is seeking a programmer analyst with at least three years' RPG II systems 34 experience. Our client is currently reviewing its financial systems with a view to redevelopment.

## BASIC + 2 OR BASIC + PROGRAMMER

HERTS/ROCKS £.5K

Two enterprising installations are seeking programmers with RSTS/E experience, preferably with RMS. Applicants will be working on general Commercial Systems within small teams. Company progression and benefits are excellent.

## SYSTEMS & PROGRAMMING

## ANALYST/PROGRAMMERS

To £16,000

## IBM PL/1

Our client, a well-known firm based in Central London are currently engaged in the development of major systems. They retain IBM mainframes and use CICS, DL/1 and IMS. Candidates should possess a minimum of 2½ YEARS' PL/1 experience preferably gained in an ON-LINE environment. Applicants will be involved in the development of a wide variety of large systems with user contact. Excellent prospects to Project Leader level.

- ★ EMPHASIS ON TRAINING
- ★ PROMOTION PROSPECTS
- ★ REWARDING CAREER

## PROGRAMMER

To £11,000

## IBM COBOL

This PRESTIGIOUS firm of Merchant Bankers in the CITY can offer an exciting career move for a programmer with a minimum of 12 MONTHS' IBM COBOL and 6 MONTHS' CICS experience. Ideal applicant should be ambitious, and looking to progress in to analysis. In return you will be offered varied financial development projects in a progressive environment.

## ★ SUBSIDISED MORTGAGE, PENSION AND

## LIFE ASSURANCE

## INTERNATIONAL TRAVEL

★ TRAINING IN DL/1

## PROGRAMMER/ANALYST

IBM COBOL

To £11,000

A rapid expanding Service Company based in the City is seeking a Programmer or a Programmer/Analyst with a minimum of TWO YEARS' COBOL, some of which should have been gained in an IBM environment. This is an ideal opportunity for an ambitious individual to become involved in a wide range of hardware, software and applications. Opportunities for TRAINING, career advancement and travel are excellent.

## ★ VERY VARIED WORK

## ★ TRAINING IN TP AND DATABASE

★ USER CONTACT

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STATE OF BAHRAIN  
GENERAL ORGANISATION FOR SOCIAL INSURANCE  
P.O. BOX 5319  
MANAM  
BAHRAIN

Bahrain, with an island population of some 350,000 has a growing diversified economy, the local population is extremely hospitable.

Hot summers and mild winters are a background to extensive outdoor leisure activities; sailing, fishing, water-skiing and windsurfing are all very popular. Tennis, squash, football and rugby are all well supported. There are many clubs, including British clubs, supporting all activities.

In the evening Bahrain offers many excellent restaurants and a variety of cabaret and theatre entertainment at one of the many five-star hotels.

The General Organisation for Social Insurance was established in Bahrain in 1976 to provide a national pension plan for Bahraini employees together with a work accident insurance scheme for the entire labour force. Further branches of social insurance; sickness benefit and family allowances are planned.

The scheme currently has some 100,000 active members paying monthly contributions to the Organisation. This income is invested extensively in Bahrain and to a lesser extent, abroad.

The Computer Services Department supports these activities and is currently controlling the payments and registration of workers in the scheme.

The Department has 20 staff and operate an IBM 4331 1 MB machine with 1200 MB fixed disk. A CICS driven User network of 15 terminals is supported at the current time under IBM's new operating system SSX.

Salaries are tax-free and will be paid in the local currency. Our currency is Bahraini dinar  
Interested applicants should forward detailed resume to the Computer Manager, P.O. Box 5319,  
GOSI, Bahrain. Interviews will take place in London during August

WICAT  
Systems Ltd

WICAT Systems, formed in 1976, has the distinction of being the first company in the world to commercially offer the 68000 processor. They are one of the market leaders with a comprehensive and highly successful range of 16 bit multi-user systems, complemented by an extensive range of vertical market software, all produced by the company.

WICAT are expanding their already substantial organization, (T/O in excess of \$40 million per annum) by opening their new Headquarters in the Thames Valley.

As a result of this expansion WICAT are seeking to employ the following support personnel:

## U.K. SUPPORT MANAGER THAMES VALLEY Over £20K + Car

This is a key management position within the company and responsibilities will include selecting and launching UK software packages to be made available under the WICAT label. The position involves working closely with the salesforce, communicating at high levels in both pre and post sales situations, and supervising the day to day running of this busy support operation.

Ideally the applicant will already be running a support team, have a knowledge of UNIX, or commercial operating systems, and understand the needs and demands of real-time, commercial systems and the concepts of database systems.

## SOFTWARE SUPPORT CONSULTANT THAMES VALLEY Over £12K + Car

We are looking for a person to join the software team of this leading manufacturer at their new Headquarters.

The position involves the development and maintenance of software running on the Motorola 68000, 16 bit multi-user system.

Ideal applicants will be those who have commercial experience using COBOL, FORTRAN, PASCAL, or C; a knowledge of UNIX would be advantageous. Above all, applicants must be user and solutions orientated.

Both positions offer exciting opportunities to join one of the most successful and rapidly expanding high technology companies in the UK.

The company offers generous fringe benefits but the real benefits derive from working for a growing company which is already one of the outstanding successes of the 1980's.

For further details contact Andy Cousins at our Reading office or write sending a full C.V.

MCL

MCCOURT COUSINS LTD.

27-29 Chinnerys Road, Reading, Berks, RG1 4PL, Tel: (0752) 648464, Fax: (0752) 648464, Telex: 844444 MCL GBR

## CODEX (UK) LTD a subsidiary of Motorola Ltd

### APPLICATIONS SUPPORT

As a major supplier of data communication products in the UK we place a high emphasis on the quality of our technical support.

Currently we have vacancies for APPLICATIONS SUPPORTERS based at our THORNTON HEATH and MARNER offices to join a group providing technical support to our UK sales staff. Successful applicants will not

demonstrate:

- Experience in Network planning and organization
- Knowledge of communications protocols
- Ability to clearly present technical solutions verbally and in a written format
- A good personal presentation.

It is anticipated that you will be either a graduate appropriate discipline or able to demonstrate relevant experience.

An attractive salary is offered, plus the use of a car. Other benefits include life assurance, private plan, pension scheme, all non contributory, two annual holidays.

Please telephone for application form  
Miss S. J. Sewerin  
Sec PA to Managing Director  
CODEX UK LTD  
01-889 2101

## SOMERSET COUNTY COUNCIL SOMERSET COLLEGE OF ARTS AND TECHNOLOGY

## TAUNTON Department of Engineering

## LECTURER GRADE II IN COMPUTING (TWO POSTS)

These two posts are available from September 1983 as soon as possible thereafter and must be filled by January 1st, 1984. Essential requirements are or professional qualification, some previous experience, or teacher training and experience of computers in commerce and/or industry.

Further particulars and application forms, s.a. Chief Administrative Officer, Somerset College of Technology, Wellington Road, Taunton TA1 5AU. Closing date: July 25th, 1983.

## VMS Specialist Support.

Berks. £11K-£13K + car

We are urgently seeking a post-salary support person to take responsibility for the support of our client's market-leading range of system software for VAX/VMS. The successful applicant will have a good client manner and have already worked extensively with VMS in a support or development role. Full product training will be available if required. Contact Brian Coates.

## Real Time Micro Systems

Gloucs. £8K-£10K

With this client there is all the challenge and enjoyment of real time systems; controllers and concentrators gathering data and large networks of linked processor all in on-line operation. We would like to hear from programmers with assembler and a high level language, e.g. PASCAL, CORAL, who believe they have something to contribute. Contact Terry Harvey.

## DEC Analyst/ Programmers

Cambs. £8K-£12K

A small systems house specialising in supplying timesharing services and turnkey systems to clients in the finance, manufacturing and distribution sectors of industry. Requires additional staff urgently. Opportunities exist to become involved at all levels with a variety of projects. Most of the development is in BASIC+2 and familiarity with this language is essential. Contact Brian Coates.

## Software Support

Middx. £14K + car

Take this opportunity to join one of the most successful computer companies of our time. You will need several years technical software experience to include: real time, data communications and/or database systems. Analysts with banking or financial systems experience would also be of interest. You cannot fail to be impressed by this client. Contact Terry Harvey.

## IBM Assembler Programmers

Middx. £8K-£15K

A client is a small friendly company with a varied workload. We are seeking two or more programmers with a minimum of one year's experience including CICS, SHADOW, DL/I, VSAM and general applications development. This is a 9-to-5 job; enthusiasm and self-motivation are required together with considerable versatility. High rewards await the right candidate. Contact Brian Coates.

## Electronics Engineers

Bucks. £10K-£14K

A world leader in the design and manufacture of CNC systems has additional requirements resulting from growth. We are seeking electronics engineers who can work from design level through specification, costing, prototyping and production in a manufacturing environment on advanced control systems. Ideally a sound engineering background in a similar position is preferred. Contact Terry Harvey.

## Sen. S/W Engineers

Berks. £11,000

A small development team working on product implementation in the area of international telex systems is seeking additional experienced software engineers. Successful applicants will work closely with electronics designers on new products and facilities. They will play a full part in providing project plans, monitoring schedules and training junior engineers in procedures and techniques. PDP11 and Intel development tools. Contact Terry Harvey.

## Project Management

Herts. £14,000

To provide consultancy on and undertake the specification, design and implementation of systems software (executive software, interface handlers, language systems, etc.) for real-time scientific applications with a British manufacturer. Fluency in Assembler and one or more of CORAL/PASCAL/BCPL in a real-time environment is essential, as is a degree, preferably in Computer Science. Contact Brian Coates.

## Programmers Minis/Micros

Bucks. £9K-£12K

A successful company with a product having a special place in the communications and travel industry, requires several programmers with a minimum of one year's experience including CICS, SHADOW, DL/I, VSAM and general applications development. This is a 9-to-5 job; enthusiasm and self-motivation are required together with considerable versatility. High rewards await the right candidate. Contact Terry Harvey.

## DEC Financial Programmers

Surrey/Herts. £12,000

If you have a minimum of 2 years experience of programming commercial applications, preferably in BASIC+ or BASIC+2 on PDP11 under RSTS/E or VAX/VMS, then here is an opportunity to develop your career with a successful commercial software house. Our client is involved in all aspects of software production and installation and currently requires several programmers. Contact Terry Harvey.

## Tech. Pubs. Manager

South-East £14,000

A young, high-technology company has now reached a point where it needs to formalise its documentation procedures and is seeking to recruit a technical publications manager. The position requires a high degree of organisational skill, commercial awareness, technical expertise and above all, enthusiasm and a professional approach to documentation standards. An outstanding opportunity for career development. Contact Brian Coates.

## DEC Software Applications

Hants. £9K-£12.5K

A rapidly expanding computer services and consultancy company requires top level specialists in data communications, distributed processing and electronic point of sale systems. Successful applicants can expect to become involved in any or all activities from: consultancy, project management, system design, program development, system testing, installation and education. Rewards will be consistent with the level of experience. Contact Terry Harvey.

## Software Engineer

Bucks. £9K-£12K

For this position the ideal candidate will have a background in electronics but more recent experience in software. Preferably PLM and assembler level micro development systems and the 8086 family of processors. You will work on control systems in the area of CNC and related products at a design and specification level. Contact Terry Harvey.

## Comms. S/W Design

Middx. £12,000

Develop your career and your existing communications software skills by joining a company already firmly established in this high growth sector of the computer industry. We are seeking software people with experience in developing 3270 compatible systems and as much experience as possible in X.25 and LAN products. Experience in C or PASCAL using M68000 and/or T1990 would be useful. Contact Terry Harvey.

## S/W Design & Development

Middx. £9.5K-£15K

Two vacancies exist in this development group responsible for the production of Advanced Signal Processing and CAD systems. Packages will include UNIX-compatible Operating Systems, LAN, compilers, high-speed interactive graphics and videotext look-alike software, using BCPL on Special Processor and system architectures. Degree (or equivalent) and expertise in BCPL and disc-based O.S.'s is essential. Contact Brian Coates.

## Systems Executive

Herts. £10,000 + car

Approximately 3 years commercial applications including communications, office automation and COBOL are the prime requirements for this specialist support role. You will work in close conjunction with the sales and marketing department and be responsible for the installation and post-sales support of Distributed Data Processing and Office Automation software, together with some pre-sales work. Contact Brian Coates.

## STOP PRESS

### A Highly Rewarding Career with Complete Job Satisfaction

As a specialised recruitment consultancy we are actively seeking 2 Trainee Recruitment Consultants. Successful applicants should possess:  
\* General Knowledge of Computing Industry. \* A pleasant personality. \* Be highly communicative. \* The ability to relate to a wide range of people - and above all the ambition to succeed in a most challenging and demanding environment. If you can match up to these standards the rewards are unlimited and a call to Terry Harvey could introduce you to an exciting career you'd never previously considered.

Write or telephone (0240) 28383 during office hours  
We are always ready to discuss these and many other interesting positions.  
Evenings and weekends only.

Terry Harvey - Great Missenden (0240) 4705  
Brian Coates - Chesham (0494) 785722.

**H. R. Associates Limited**

Executive, Computing and Technical Personnel Consultants  
57a Hill Avenue, Amersham, Bucks, HP6 5BX Tel: 0240 28383  
London office: Regent Street W1

HR



# Systems Professionals

## Looking for your first career move?

Your first move is probably the most difficult one you'll ever make. You can't afford a mistake, but how do you know you're choosing the right company?

We are convinced we've found them. Our client believes people are their strength and their commitment to their people is wholehearted. In their purpose-built development centre, you'll find both the tools and the backing to develop your skills to their maximum potential—and you'll learn those new skills you need to become involved in projects at the very forefront of technology.

Because of their policy of continued expansion our clients are now seeking dedicated professionals in the following areas:

- Office communication systems • Data communications
- Local and wide area networks • Software tools

Applicants should have a degree in computer science, electronic engineering, or a similar discipline, and a minimum of two years' development experience in real-time applications.

For further information about these positions please contact Edith Watson at Computer Search and Selection, Hamilton House, Marlowes, Hemel Hempstead, Herts HP1 1BB. Tel: Hemel Hempstead (0442) 40761.

## Computer Search & Selection

### COBOL PROGRAMMERS & ANALYST/PROGRAMMERS

CENTRAL LONDON

£7,500-£11,000

Several outstanding opportunities exist within this rapidly expanding International organisation with a £100 million turnover. The data processing department houses up-to-the-minute mini computer technology with a wide variety of modern peripheral equipment. In order to meet growing demands our client is seeking to recruit both Programmers and Analyst/Programmers to progress their career in a fast moving, real-time environment. If you can offer 18 months' COBOL expertise and want to find out more about these exciting positions contact DP Selection Services quoting ref A1.

### COMMERCIAL SYSTEMS DEVELOPMENT SYSTEMS ANALYSTS

SALARY £11,000-£14,000

Our client, a major UK Company based in LONDON, is seeking to recruit experienced Systems Analysts to work on their IBM mainframe. Ideally, candidates will be able to demonstrate experience of systems analysis from feasibility through to implementation in a commercial environment. Some knowledge of interactive and/or database systems would be advantageous although not essential. The opportunity to work on new development projects in a dynamic environment is combined with excellent career potential and a salary package. Contact DP Selection Services quoting ref A2.

### JUNIOR PROGRAMMERS - AN OPPORTUNITY TO MOVE TO IBM ESSEX

£8,000

Can you offer at least one year's COBOL or RPG programming experience on any mainframe? Our client is seeking to recruit a number of Programmers keen to progress their career in an IBM environment using IBM 4341 DOS/VSE for their installation based in Essex. An excellent range of company benefits are also available. Please write or telephone quoting ref A3.

These are just some of the career opportunities that we are currently assisting our clients to fill. We would be pleased to talk to you regarding these and many other vacancies that we are currently aware of. Telephone one of our consultants to discuss your particular requirement and how DP Selection can help you.

**dp** **SELECTION SERVICES**

A member of the DSS Support Services Group

7 Swallow Street, London W1R 7HD  
"We look forward to hearing from you."

01-434 2042

### Systems Programmers and Consultants

For the development of systems tools and utilities, including the provision of a portable toolset based on the UNIX operating system. IBM or VAX background preferred, and a knowledge of 'C' or PL/M would be an advantage.

### Software Engineers

To become part of a team currently developing office communications and networking software for Z80 based microcomputers.

### PL/1 Programmers

To customise generic systems software for PABX applications. Knowledge of MVS essential. Experience of IMS or SPF would be an advantage.

### Team Leader, Engineering Development

The successful applicant will be responsible for a team of up to 6 hardware engineers. You should have a minimum of 5 years' development experience and a sound appreciation of both hardware and software, particularly in INTEL or Z80 based systems.

### Hardware Engineers

For a variety of applications up to and including the prototyping of new products. Some software knowledge would be an advantage.

### INTEL 8086/186 RMX PL/M MULTI PROCESSOR

Opportunities of rare scope and challenge now exist within one of the most profitable and fast growing companies in the UK.

As part of our programme to remain the world's leading news organisation and supplier of electronic information services to the media and financial community we are expanding our technical development group in London.

We have one of the largest private communications networks in the world which we are now in the process of replacing. Satellites, LANs, microwaves and advanced networking all play major roles in our approach to developing our new worldwide communications facilities and databases.

Reuters' technical staff not only deal with current but also future technologies and constant attention to development is a key ingredient in Reuters' success. We are one of the largest OEM customers of DEC in the world and at the forefront of the application of

£10,500-£13,000 +

Intel hardware to new terminals and systems under development.

Our requirement is for programming staff to join small highly skilled project teams and contribute to the design and development of Intel and DEC based real time systems to challenging timescales, using excellent development facilities.

Candidates will have had one or more years experience of programming in high level real time languages such as PL/M/86 or PASCAL under the RMX/86 or VMS operating systems. Experience with multiprocessor MULTIBUS systems, MMX, Communications protocols, LANs, DECNET or database systems would be an advantage.

For a confidential discussion regarding these opportunities please telephone Miles Richards on 01-938 1804 (24 hrs) or 01-847 2385 evenings 7 pm - 9 pm.

(4811)

# REUTERS

## DEVELOPMENT OF A NEW INTERNATIONAL NETWORK

### VAX 11/780 VMS PASCAL DECNET

**IPP** Information Processing People  
20 Kensington Church Street, London W8 4EP  
Telephone 01-938 1804 Telex 22861

## MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611

### Ambitious Sales Professionals looking for the ideal

### Blue Chip Opportunity



Our client the Nissei Sangyo Company, a trading company within the Hitachi Group, has fully established itself in the market place by offering outstanding products. They are a major supplier of peripherals in the U.K. supported by CAREER and COMPANY DEDICATED professionals.

Nissei Sangyo has created two opportunities for sales executives to be responsible for the marketing of new and exciting products. The company wishes to achieve a significant market share within Europe in the next three years by introducing into their existing product line, slim line floppy disc drives and an extensive range of printers. Successful candidates will be aged 25-35, educated to degree or HND standard and with a proven track record in technical sales to major OEM accounts.

Based at their modern prestigious headquarters in Ealing you can expect a salary of around £15,000 dependant upon qualifications and experience plus a 10% annual bonus and a luxury 2.3 litre car. All the usual company benefits are included.

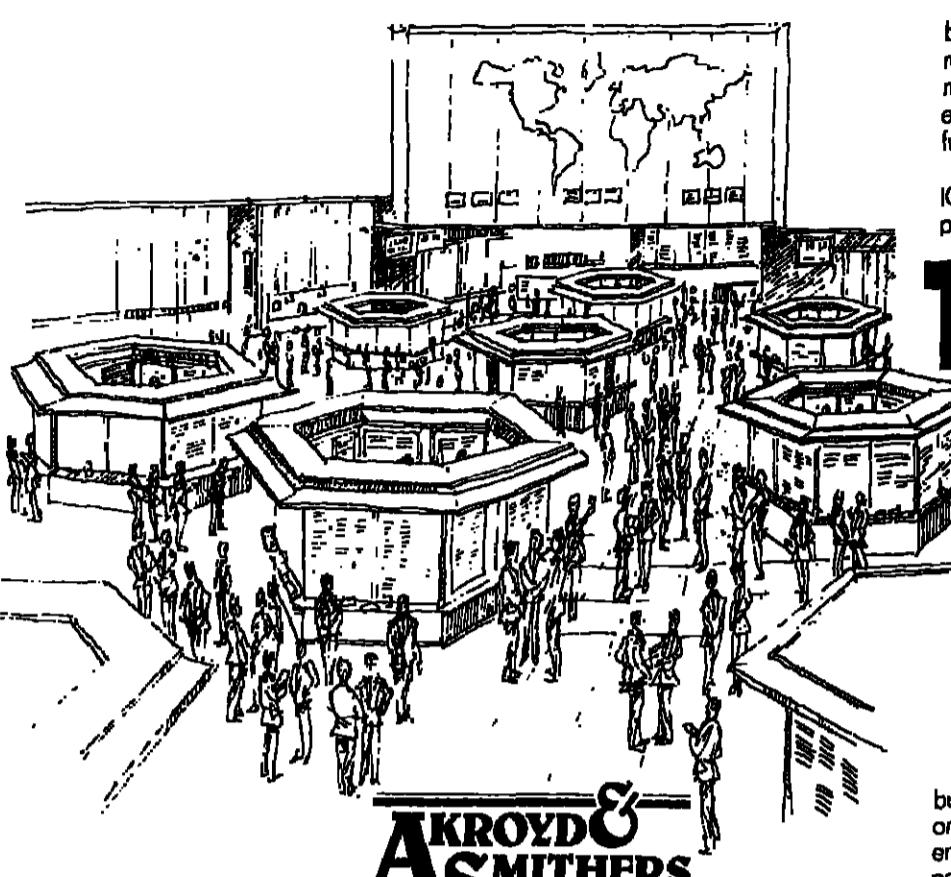
For an early interview, please contact Kathy Sinclair on 01-637 9611 or send your C.V. to Management and Executive Selection, Suite 201/208, Albany House, 324 Regent Street, London W1R 5AA.

 **NISSEI SANGYO LTD**  
a member of the HITACHI GROUP

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

MANAGEMENT & EXECUTIVE SELECTION

CTR

Computer  
Technology  
Recruitment  
LimitedAKROYD &  
ASMITHERS

The floor of The Stock Exchange, LONDON

For over a century Akroyd & Smithers has been one of the most innovative names in City businesses. Commitment to growth and diversification has established the company's strong reputation in the competitive and highly specialised field of stockjobbing, and they now deal in the majority of financial markets. Within their exciting business development plans, international exposure has taken them to North America, Europe and the Far East and they are now making further impact by focusing their experience on the new Financial Futures Market.

This outlook is reflected in their approach to DP. Theirs is one of the most progressive, attractive ICL environments with major enhancements scheduled; a place where the ambitious and talented professional has an integral and active role to play.

## The Future Horizon Marking an exciting DP turning point

- \* Twin ICL 2955s
- \* X-25 Packet Switching
- \* DRS/Local Area Networks

### SENIOR SYSTEMS ANALYST

£12K-£15K + Profit Sharing

Top flight skills, a strong programming and business analysis background, specialising in on-line implementation in a financial environment, need to be complemented by the personality and communicative ability to present and promote DP facilities to users.

- \* Conversion from DME to VME
- \* Database
- \* Real Time Processing

### PROGRAMMERS

c£10K (very negotiable) + Profit Sharing

An ICL Cobol Programming background is vital and VME, IDMS, DDS and TPMS experience extremely advantageous. Personal qualities and management ability will identify you for a more senior role.

Project scope; career progression; technical stimulation; profit sharing; subsidised staff restaurant and season ticket loans are among the features of this excellent working environment.

They'll turn your DP career to a future with potential. To discuss these opportunities in more detail call Jane Emmanuel on 01-734 9723 or 01-467 2828 evenings and weekends.

TRIUMPH HOUSE, 180 RECHIN STREET, LONDON W1R 7WD 01-734 9723 • As advanced as the industry we serve

## Basic Programmers Here's a big plus to your future!

£8-12,000 + benefits

Our Client is a very successful, highly respected, Systems House and one of a specially selected number of DEC distributors in the UK. Such is our Client's reputation of quality and service that a sales force is not necessary, with the bulk of the Company's business coming in via 'word of mouth' - and in today's market that stands for a lot.

Since its formation some five years ago, the Company has been expanded in a measured and logical fashion and today, offers its employees unequalled security and high financial rewards.

In order to cope with current and future workloads, our Client seeks to recruit a number of Programmers with sound experience of DEC BASIC to become involved in the development of a wide range of systems on behalf of Clients, using BASIC-II v.2 and the RMS file handler on a powerful, dual PDP 11/44 configuration under RSTS/E.

Technical Sales & Management Appointments

Specialist Computer Recruitment Ltd

**SOUTH**  
James House, 48 James Street,  
London W1M 5HS  
01-403 007/403 0447

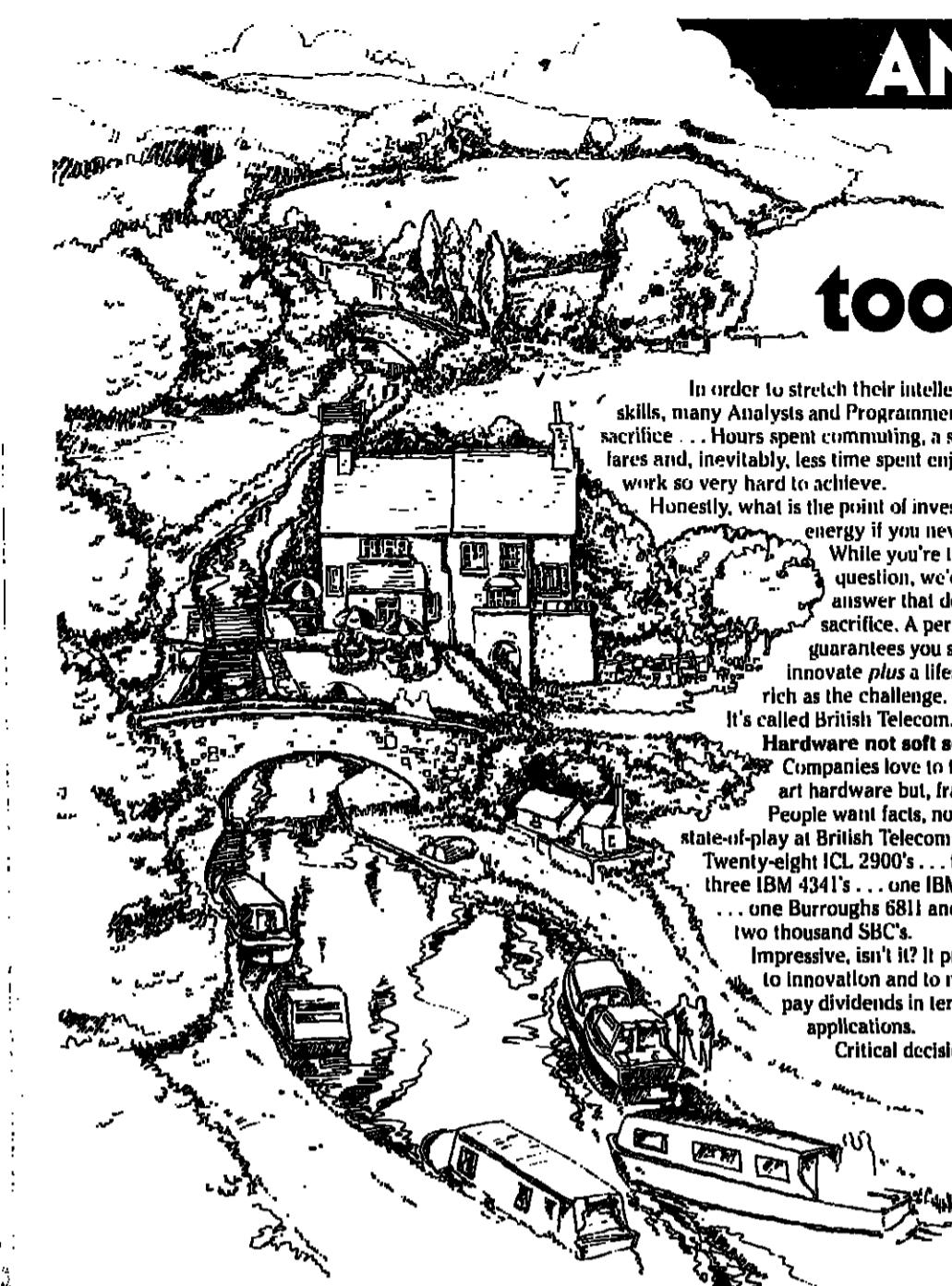
**MIDLANDS & INTERNATIONAL**  
33-37 Great Charles Street,  
Didsbury, Manchester M15 4SY  
01-295 4700/4701

**NORTH**  
International House, 64 Deansgate,  
Manchester M2 4PL  
01-833 4422

**BELGIUM**  
Avenue Louise 327  
Borde 4, 1050 Brussels  
010 322 840 7157/71

**HOLLAND**  
Weteringschans 92  
1071 H.M. Amsterdam  
010 3125 7004/7

**These vacancies are open to male and female applicants.**



# ANALYSTS/PROGRAMMERS

## Are you paying too high a price for ambition?

In order to stretch their intellects and reach for new skills, many Analysts and Programmers accept a shabby sacrifice . . . Hours spent commuting, a small fortune spent on fares and, inevitably, less time spent enjoying the lifestyle they work so hard to achieve.

Honestly, what is the point of investing so much effort and energy if you never profit from it?

While you're thinking about that question, we'd like to suggest an answer that doesn't involve personal sacrifice. A perfect compromise that guarantees you scope, freedom to innovate plus a lifestyle that's as full and rich as the challenge.

It's called British Telecom.

**Hardware not soft sell . . .**

Companies love to talk about their state-of-the-art hardware but, frankly, talk is cheap. People want facts, not fiction. So, here's the state-of-play at British Telecom . . .

Twenty-eight ICL 2900's . . . thirty IBM 4331's . . . three IBM 4341's . . . one IBM 3081, 3033 and 3083 . . . one Burroughs 6811 and 6930 plus practically two thousand SBC's.

Impressive, isn't it? It proves we're committed to innovation and to making our investment pay dividends in terms of advanced applications.

Critical decisions on expenditure.

offering you the perfect compromise of total, real-time systems involvement with an altogether richer lifestyle.

That's our unique proposition to everyone with at least 12 months' experience of isolating and solving complex systems problems. Professionals who are fluent in COBOL, PL/I and BASIC. Ideally, young men and women with more than a nodding acquaintance with IBM 4331 and/or ICL 2900 systems.

If you have the vital qualities and qualifications, ring us now. We're planning special OPEN EVENINGS when you can walk in and get together with our senior systems people over a glass or two of wine. It's a unique opportunity to meet the team that's setting the pace in applications development . . . so make a date with British Telecom. Ring Michelle Prieatley on Freephone 2593, 24 hour service.

Our Nationwide search for Systems Innovators starts here - From 5.30pm

London Tues. 19th July London Wed. 20th July Cardiff Thurs. 21st July

Drake & Essex Suite Britannia Suite  
The Strand Palace Hotel Drury Lane Hotel  
Strand WC2 Drury Lane WC2

Duchess Suite Park Hotel, Park Place  
Cardiff CF1 3UD

If you really can't make an Open Evening, but would like to know more, get in touch now.

(459)

**Data Processing**  
British Telecom

Telephone: Freephone 2593 (24hr service)

## If systems development is your strength and IBM System 38 your experience, you're our kind of Programmer

c.£9,000

Durst UK, based in Epsom, Surrey, part of an international group designing, manufacturing and marketing photographic processing, printing and enlarging equipment throughout the world.

The company's total commitment to Data Processing extends into many internal functions and is highlighted by the development of a totally interactive system, advanced process control, as well as office automation, based on the IBM System 38 model 7 using RPGIII. It is interesting to record that the company's development of computer applications has made the installation an IBM reference site.

For young computer professionals looking to make their mark in a small team environment and develop a career in systems development, this is an ideal opportunity to become involved in new projects. This will involve working closely with users and management teams identifying their needs and developing and implementing new systems.

The need is for a graduate-calibre Programmer ideally aged early - mid 20's, who has 6-9 months' experience of System 38 and good communication and interpersonal skills. You should also be hard working, a good team member and ambitious to develop into a broader role involving systems analysis.

We'll offer a salary negotiable up to £9,000 pa plus the benefits to be expected from a successful international company.

If you have the ability and enthusiasm to work in a career-stretching role where your knowledge and talents are constantly challenged, we'd like to hear from you.

Please write giving details of your career to date to J. D. O' Mahony, Personnel Manager, DURST (UK) LIMITED, Longmead Industrial Estate, Feltstead Road, Epsom, Surrey KT19 7AR Tel: Epsom 26262

**Durst**  
PHOTOGRAPHIC EQUIPMENT

intel

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the future

### SYSTEMS SOFTWARE SUPPORT WITH THE INDUSTRY LEADER

Intel, the technology leader in the microcomputer industry, is establishing a European technical support centre for its leading systems products.

Therefore we are seeking highly experienced systems software people in the following areas:

#### Database systems support

To support the mainframe database systems supplied by Intel, we need an experienced database specialist. You will probably be working on a large IBM site under MVS, DOS, VM - CMS or similar mainframe systems. If you also have a knowledge of distributed database applications on microcomputers and the associated communication expertise, it would be highly desirable.

#### Real Time/TP operating systems support

To support the sophisticated IRMX operating system, we need specialists in the real time applications on microcomputers both commercially and technically. IRMX experience would be desirable but not essential if an equivalent expertise is present. Experience of TP applications would also be useful.

#### XENIX/UNIX support specialist

To support the XENIX/UNIX operating system on Intel microcomputers and the associated office automation and relational database products, we require an experienced specialist of this type. You will probably have worked on XENIX/UNIX, preferably on Intel systems, and it is highly desirable that the application areas were in office automation products.

Candidates for any of the above posts are unlikely to be under 26 years of age.

Each of these positions offers an outstanding opportunity to join an industry leader at an exciting stage of its growth: career progression is limited only by individual performance and the compensation package reflects the importance of the posts.

Please telephone for an application form or send a CV to Ray Withey, Personnel Manager, Intel Corporation (UK) Ltd, Pipers Way, Swindon, Wiltshire. Tel: (0793) 488388.

These vacancies are open to male and female applicants.

### Senior Analyst/Programmers Holland

To join our existing team in The Netherlands, developing a dynamic real-time on-line database and communications system for an international oil and shipping concern. A sound knowledge of IBM System 36 is required together with some PPS [1].

Due to the continued expansion of the data processing facilities to incorporate the total world-wide organisation this will enable successful candidates to become involved with a major communications network from its inception.

Ref 01/05

### Software Engineers/Project Leaders Herts

As one of the UK's leading communication equipment manufacturers our client is seeking to enhance its Software Tools Development team.

Although mainframe based these tools are intended for use by teams working on new micro-computer development systems. The software tools section are responsible for the design, development and support to both in-house and client users.

Successful applicants will have a minimum of 3 years real-time or communications experience, proven involvement in software tools development and/or support preferably with knowledge of UNIX and 'C'. Excellent salaries plus benefits package is offered.

Ref 01/06

### Telecoms Development Essex

Engineers, from Graduate to Senior levels, with experience in both hardware and software aspects of the telecommunications industry are required to adapt and modify existing equipment to conform to British Telecom standards and overseas customer requirements.

Full large company benefits plus relocation, where applicable, is available to successful applicants.

Ref 01/07

### Hardware Development Engineers Herts

To develop hardware for a new range of mini- and micro-based hardware for Electronic Mail, Office Automation, Networking and Telecommunications systems. Good design ability is a necessity with a willingness to work in a team environment. Full training will be given, where required.

Previous development experience on Zilog, INTEL or MOTOROLA hardware is advantageous plus the ability to understand the software requirements generated by the hardware development. The company's rapid growth means excellent promotion prospects.

The number and variance of current and new projects together with the most up-to-date laboratory facilities make this an opportunity not to be missed.

Ref 01/08

### Lecturers London

To join an organisation specialising in the presentation of Programming and Systems Analysis courses to DP personnel. Courses are mainly aimed at the commercial skills i.e. COBOL programming and the design of sophisticated business systems.

Candidates should have a sound programming and/or analysis background with the desire to instruct. Full training in the preparation and presentation of courses will be given as well as the opportunity to be trained in new languages, techniques, etc. These positions offer both challenge and reward.

Ref 01/09

### Technical Authors UK & Overseas

Hardware and Software authors for a large number of clients on projects covering the following topics:

- Operating Systems/conversion manuals
- User manuals for: Intelligent Terminals; UNIX & 'C' - microprocessor development systems; commercial systems
- DEC BASIC programming manuals
- Telecommunications minus
- Systems Descriptions - IBM System 36
- Process Control - sales and technical documentation

Ref 01/10

### Software Engineers Beds

To join a team developing new INTEL 8086 based machine tool control systems utilising a common core of software. Several projects are currently envisaged - some still in the early design stage.

Applicants should have 2-3 years Process Control/Real-Time experience using INTEL and PL/M. A knowledge of ASSEMBLER would also be a distinct advantage.

A realistic salary and benefits package together with excellent future prospects in a challenging software development environment makes this a first class opportunity.

Ref 01/11

### Analysts & Programmers Surrey

The computer services division of an international group have a number of vacancies for Analysts and Programmers with experience of commercial applications on PDP 11 and/or VAX machines. These positions will involve customer liaison, implementation of new systems and enhancement to their existing ones.

Successful applicants will be professional, self-motivating, enthusiastic towards their work, effective communicators and smart! Ideally you will have 3 years relevant experience using BASIC, BASIC+, etc. and salaries will be based on this.

Ref 01/12

Take this opportunity to discuss these and other requirements by phoning Hitchin (0482) 87141 or write to:

Marketing & Recruitment Division  
Industrial Artists Limited  
21 Benetoff, Hitchin  
Hertfordshire SG5 1JP. Tel: 0281 46

IA is a registered Employment Business licensed by D.O.E.

Industrial Artists Limited

# CONTRACT ASSIGNMENTS

## IBM EXPERIENCE

Progs & Anal/Progs	COBOL CICS DL/1 Home Counties	Immediate starts
Progs & Anal/Progs	PL/1 MVS Home Counties & West Country	Immediate starts
Systems Programmer	MVS Capacity Planning Central London	Immediate start
Technical Authors	Home Counties	August start
Programmer	System 34 DMAS Surrey	Immediate start
Programmers	COBOL DL/1 Easytrieve Central London	Immediate starts
Anal/Progs	COBOL IMS DB/DC Home Counties	Immediate starts
Progs & Anal/Progs	COBOL IMS DC Home Counties	August starts
Systems Programmer	CICS DL/1 South Coast	August start
Anal/Prog	Unipac South Coast	Immediate start
Programmer	Assembler MVS COBOL City	Immediate start

## OTHER EXPERIENCE

Programmers	UNIX & 'C' All Areas	Immediate/ September starts
All levels	ICL ME29 COBOL IDMS All areas	July/August starts
All levels	ICL 2900 VME/B TPMS IDMS All areas	Immediate starts
Programmers	ICL System 25 Assembler Home Counties	Immediate starts
Systems Designer	Prime North	Immediate start
Progs & Anal/Progs	VAX VMS Basic Home Counties	Immediate starts
All levels	VAX COBOL Home Counties	Immediate starts
Systems Engineers	PDP or VAX Coral South Coast	Immediate starts
Prog/Designers	Z80 Assembler Graphics Home Counties	Immediate

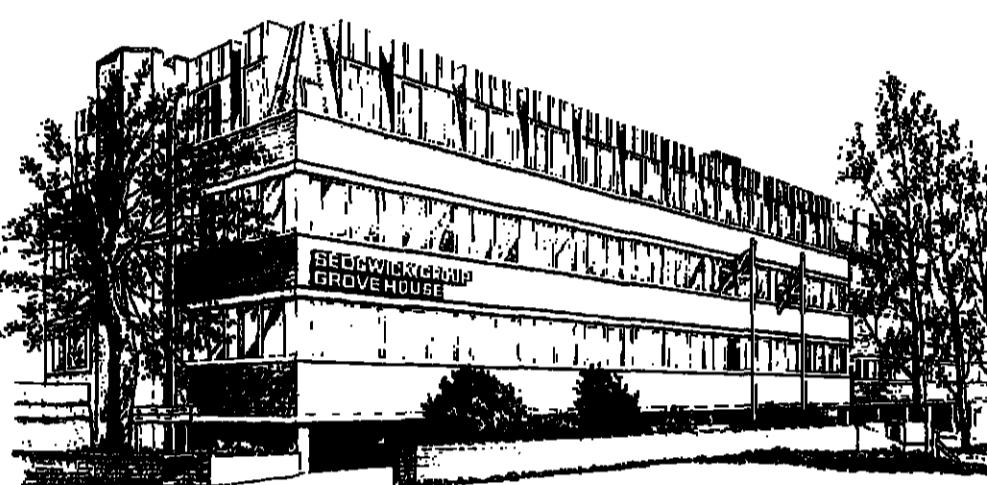
## OVERSEAS CONTRACTS

All levels	Videotext experience Australia	Ongoing requirement
Anal/Prog	Arab/Arabs America	August Start



# YOUR CHANCE TO...

Sedgwick are the leading UK multinational broking group operating worldwide, handling insurance business originating from 108 countries. Some of the world's largest and most complex projects in aerospace, oil exploration, nuclear energy and construction, involving expenditure running into billions, rely upon advice and service from a firm like Sedgwick.



Sedgwick are justifiably proud of the location of their offices in Witham, right in the heart of the Essex countryside. Apart from fresh air and open space, the area offers good low-cost housing, plus excellent road and rail links with London. The Witham complex offers a spacious and carefully planned working environment, utilising the latest office technology. In addition to this there are free restaurant facilities, free life assurance, excellent pension scheme and an active sports and social club.

Following breakthroughs in the field of integrated text and data processing, utilising a range of IBM 8100 hardware, a significant upgrade and expansion in hardware, software and information processing techniques is now taking place. The current line-up of twin IBM 3032's and 4341's will soon be augmented by the arrival of their first IBM 3083. Large on-line database developments are already underway. To maintain this impressive record, the company offers excellent training facilities, so you too can become part of Sedgwick's success.

## SYSTEMS ANALYSTS AT ALL LEVELS

c£11k-14k

You will analyse user requirements, design computer based solutions, and produce specifications to detailed design level. You will have from 2-4 years analysis experience, a programming background and ideally a knowledge of T/P systems. Experience of DL/1, CICS or UFO would also be advantageous.

## PROGRAMMERS AT ALL LEVELS

c£8k-12k

You will write, amend and maintain programs from program specifications and code and test programs as necessary. Lead programmers are also required to design, write and amend programs and supervise a small team. Your experience includes one or more of the following: Assembler, COBOL, CICS, UFO, T/P systems or DL/1 and also IBM mainframe or 8100 hardware.

## ANALYST/PROGRAMMERS

c£10k

You will work with users to define requirements and assist in development with high level/interactive programming languages. Necessary experience includes COBOL programming and the ability to communicate at all levels. Knowledge of SAS or CA-EARL would also be advantageous.

## DATABASE ADMINISTRATOR

c£15k

A new area of responsibility is to be created to assist with the introduction of major new database systems using CICS-DL/1, within the technical support group. This challenging role will include the audit of data analysis, database and transaction design and the management of Data Dictionary facilities. The successful applicant will be expected to bring initiative to the future development of the department. Experience ideally includes systems analysis in a CICS-DL/1 or IMS environment, coupled with an interest in the technical aspects of database systems plus the ability to operate at a senior level.

To register your interest in this challenging position or simply to obtain more information, please telephone Barbara Basquill on 01-734 7394 (office hours), or on 0787-237116 (evenings and weekends) or send your C.V. to the address below.

# ...JOIN THE SUCCESS.

**WARWICK WOODWARD** 

A SPAN GROUP COMPANY

43-44 GREAT WINDMILL STREET, LONDON W1V 7PA  
TELEPHONE: 01-734 7394 24 HOUR ANSWERPHONE

Please send me more information on Sedgwick

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_

Present Position: \_\_\_\_\_





# Sedgwick

## MANAGEMENT AT ITS BEST

c.£16,500

Due to internal promotion, Sedgwick now wish to recruit a **Project Manager** to oversee the running of 2 large teams in the development and maintenance of systems within specific areas of the business cycle.

With approximately 20 development staff (including Project Leaders) reporting to you, your motivational, managerial and organisational skills will be utilised to the full. Your responsibilities will also include recruitment of further staff, appraisals and salary reviews, as appropriate, and the preparation and control of projects with long and short term development plans. There will also be a substantial amount of senior-level user liaison.

The seniority of this position dictates that you will have spent at least 8 years in D.P., 2 of which will have been in a similar managerial position running multiple projects. You will also have experience in the use of database techniques or in distributed data processing plus the ability to communicate at all levels.

The Sedgwick D.P. Department is based in Witham, in the heart of the Essex countryside, which offers good low-cost housing, plus excellent road and rail links with London. The benefits package includes: free life assurance, free staff restaurant, contributory pension, sports and social club, etc.

To register your interest in this challenging position or simply to obtain more information, please telephone Barbara Basquill on 01-734 7394 (office hours), or on 0787-237116 (evenings and weekends) or send your C.V. to the address below.

**WARWICK WOODWARD** A SPAN GROUP COMPANY  
43-44 GREAT WINDMILL STREET, LONDON SW1V 7PA  
TELEPHONE: 01-734 7394 24 HOUR ANSWERPHONE

### SALES EXECUTIVES

#### SALES EXECUTIVES — MAINFRAMES

Major International mainframe manufacturer need very high calibre sales executive based North London. Salary £12k plus. Car. £30k

#### SALES EXECUTIVE — SYSTEMS/BUREAU

Well-established and successful systems house and bureau require sales executives based West London. Good salary. Car.

#### SALES EXECUTIVE — MINIS

To sell established range of minis to end users on commercial territory. Based South Herts covering North London and H.C. High basic. Car. To £22k

#### MINI/MAINFRAME — GOV.

Experienced mini/mainframe sales executive needed by blue-chip manufacturer to sell into government area. London based. Salary circa £12k. Car. To £28k

#### MICRO SALES EXECUTIVES

If you are a micro sales exec. looking for high income, please contact us as we are constantly recruiting for leading distributors/manufacturers in London and Home Counties.

Plus many other excellent sales vacancies  
Telephone for an appointment

#### SDS CONSULTANTS

COMPUTER PERSONNEL CONSULTANTS

AFTER 8 p.m. and weekends: 0444 468894

150 Regent Street  
London W1R 5FA  
Tel: 01-439 6288

#### Freelancers-immediate requirements

VME, TPMS, IDMS, CICS, DL/1, SYSTEM 34, RSX, CORAL.  
Challenging assignments for experienced Analysts and Programmers in North of England, Midlands, West Country and Europe.

#### VISIONHERE

Write with full CV to John Royle

#### COMMUNICATIONS LIMITED

Langley House, Stenneylands Road,  
Wilmslow, Cheshire SK9 4HA.  
Telephone: Wilmslow (0625) 632127. 14081



#### SOFTWARE ENGINEERS

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£20K+car++ Leading CAD/CAM manufacturer, 32 bit machines, offers superb opportunity to expand into marketing using your software skills.

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# ANALYSTS·PROGRAMMERS TECHNICAL SPECIALISTS

## Business Systems Analysts

To be responsible for preparing feasibility studies that incorporate financial analysis and justification, together with the development of detailed design specifications for management approval. You will also have direct involvement in actual systems implementation and will play a major role in preparing educational packages and training users within Honeywell.

Our continued development of sophisticated systems to meet the user needs of the future places exacting and exciting demands on all areas of our business. That's why we have a major commitment to developing superior, advanced systems within our Management Information Services Operation at Brentford, providing business systems and services within Honeywell.

The need is for senior level professionals

with at least 5 years' experience of commercial systems within a large company environment and an in-depth understanding of the business practices involved in a Sales/Marketing/

Financial operation. Ideally degree qualified, you should have a sound working knowledge of Database, Transaction processing and time-sharing on mainframe, mini or micro-computers.

## Programmer/Analysts

With an end-user orientation, having a minimum of 2 years' experience in programming COBOL, Basic, as well as utilisation of end-user facilities such as query languages and office automation systems. The ability to communicate and work well with users is essential to job success. Areas of concentration will be in Marketing, Distribution, Personnel and Finance support systems. In-depth working knowledge of Honeywell products is a definite plus.

**We've invested a great deal in  
our own systems...**

**...our expansion programme means we can  
now offer a great deal to talented professionals**

## Programming Team Leaders

With around 4/5 years' programming experience, a sound knowledge of database and communications programs and the ability to supervise a small programming team. Experience in writing specifications and scheduling/monitoring projects is essential, as is the ability to guide programmers in solving technical problems as they arise.

## Systems Programmers

To assume senior roles in the Technical Support Group supporting in-house computing services. Experience should include the installation of software and resolution of

operational problems together with the use of optimisation and efficiency techniques on DMIV and TP. Whilst a sound knowledge of GCOS, TSS, JCL, GMAP is essential and a background in COBOL, Fortran and structured program methodology is a distinct advantage, the emphasis is on the ability to absorb a challenging technology and plan for the future.

## Data Communications Network Specialists

As our sophisticated, UK-wide Data Communications Network continues to expand, we need several specialists with at least 2 years' experience of communication software and hardware facilities. It is vital that you have diagnostic skills, to enable you to resolve user problems on the network in the most timely

manner. A knowledge of British Telecom current and planned future services, as well as Honeywell Data Communication products would obviously be a great advantage.

All these positions offer outstanding career opportunities with salaries of up to £14,000 p.a. for the more senior levels — matched only by the challenge and variety of a company committed to innovation and development. The prospects for rapid career development within the progressive Honeywell organisation are excellent.

So, if you can match our systems excellence with your expertise, please write with full personal and career details to Chris Hill, Assistant Personnel Manager, Honeywell Information Systems Ltd., Honeywell House, Great West Road, Brentford, Middlesex.

# Honeywell





The IBM SYSTEM 34/36/38 Recruitment Specialists



## PROGRAMMERS/ ANALYST PROGRAMMERS

TRW Carr Limited is a major UK manufacturing division of a large American corporation employing over 450 personnel in this country. The company are on the threshold of major software developments and a significant hardware upgrade which is currently based on an IBM 4331. A vacancy now exists for an Analyst/Programmer to assume a senior role within the department and we are seeking experience in any of any of the following areas:

- ★ IBM MAINFRAMES
- ★ COBOL
- ★ MANUFACTURING SYSTEMS
- ★ DOS/VSE, CICS, DL1

ANALYST/PROGRAMMER

EXCELLENT

In return TRW Carr offer competitive salaries and a comprehensive benefits package including annual bonus and company membership to BUPA.

LOCATION: NOTTINGHAMSHIRE

JAS22/1

RHM Foods Limited is a successful company within the Grocery Division of the Rank Hovis McDougall Group, manufacturing and distributing a wide range of well-known branded grocery products. Recent expansion within our Management Services Department has created a vacancy for a Programmer/Analyst with sound Cobol programming skills gained on mainframes in a commercial environment. The position involves co-ordinating the work of a small programming team and contributing to detailed systems design. The initial task will be the re-development of the order processing/stock control system. Our hardware is based on two ICL 2960s which support a national terminal network covering Production, Distribution, Sales, Accounting and Personnel systems. We are currently converting to VME 2900 from System 4 DME. In addition to an attractive salary and benefits package we offer good career prospects in a successful and dynamic business.

LOCATION: SW. LONDON

PROGRAMMER/ANALYST

c. £20,000

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to £22,000

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Address: \_\_\_\_\_  
Home tel: \_\_\_\_\_ Work tel: \_\_\_\_\_  
I am interested in Ref: \_\_\_\_\_

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A member of the D.P. Support Services Group

"We look forward to hearing from you."

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the Middle East is a rapidly growing market.  
With the introduction of the new software, the company is

At Financial Insurance they can offer you this . . . plus responsibility and excellent long term prospects for career progression.

To maintain their outstanding reputation for service additional personnel are being recruited to handle the increase in business.

Based in London you will be joining an established, successful and rapidly expanding organisation who are using mass marketing techniques, involving life insurance and related products, primarily credit life, credit accident and sickness through banks, building societies, finance companies and similar financial institutions.

On site they have both System 34 and System 38. Your immediate involvement will be with System 38 and people are needed who would like to develop their knowledge in this area.

The D.P. department is a compact and friendly site with long term expansion plans. Joining now will give you a great deal of ground floor involvement, plus the advantage of highly competitive salaries suited to your ability and experience.

Please telephone for an early informal discussion to: Richard Milsum on 01-354 1055 during office hours or on 01-958 2553 in the evenings and weekends. Alternatively please send full details to me at:

MARCH COMPUTER RECRUITMENT  
1 NOEL ROAD, LONDON N1 8HQ  
01-354 1055

# SUPERB CAREER OPPORTUNITIES FOR ANALYST/PROGRAMMERS

The Arabian American Oil Company is the largest oil producing company in the world and as such can offer unparalleled opportunities and challenges to qualified professionals. Such is their commitment to Data processing, they are reputed to have one of the world's widest range of computer applications systems, and are still expanding in all areas. Currently their hardware consists of 3033's, 3081's and a wide range of mini's and micro computers and will shortly be supplemented by further State-Of-The-Art equipment. However, their huge investment in computerisation cannot simply be measured in terms of hardware alone, 'man centuries' of development effort will be invested in a diversified range of applications such as human resources, materials and the Transpenninsular Natural Gas Liquids Pipeline System.

As a result they are now urgently looking to recruit Analyst/Programmers with at least 3 years' experience of PL/1, OS JCL or CMS, a knowledge of IMS would also be an advantage.

Selected candidates, who should be educated to Degree level, will be offered an indefinite term contract, initially on single status, and a range of benefits that can be compared with the best in the Middle East.

Please contact Caroline Tee for an application form and further information on: 01-723 4053 or write to: Comcap Resources Limited, 26 Chilworth Street, London W2 6DT.

The need for computer personnel is on-going and if you are not available at present, you should register now for future opportunities.



**ARAMCO**



COMCAP RESOURCES LTD.

partners in progress

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WPA  
SACROSS  
SACROSS

## CONTRACT SALES NORTH WEST

Position: Contract Salesperson  
Income: Negotiable Package - £15,000+  
Office Base: Altrincham, Cheshire

We need an ADDITIONAL SALESPERSON to join us in our ALTRINCHAM office, to assist us in further expanding our business in the North . . . but NOT JUST ANOTHER SALESPERSON.

We are looking for a background in SALES, preferably contract consultancy or permanent recruitment, with the personality and AMBITION to fully participate in the GROWTH and SUCCESS of the company.

Reply to:  
R. Thomson, Regional Manager -  
Altrincham (061-928 8302)  
D. V. Gibbons, Director - London.

# Analyst/ Programmer

As Site Controller

London

Our client, a subsidiary of a major British company with an international reputation in specialist engineering and manufacturing, requires to appoint an Analyst/Programmer as Site Controller at a small self-contained installation.

The person appointed will undertake on-site systems development, programming and user liaison, and will additionally provide support to the operations function. Reporting to a senior manager in the central Computer Services Department, the job holder will be required to provide a reliable and effective service to local management, and will be supported where appropriate by Computer Services personnel. This is an exceptional opportunity for an ambitious DP professional to achieve career progression, and to acquire management related skills.

Candidates should have recent experience in an ICL environment, with proven analysis ability gained ideally on Financial Applications, and with evidence of a strong background in programming. Self-motivation, and determination to achieve objectives, are essential qualities for this position, and applicants should be able to work on their own initiative or as part of a team.

The attractive remuneration package includes excellent salary, bonus, contributory pension and the usual large company benefits. Relocation expenses will be reimbursed where appropriate.

To apply, please write or telephone for an application form, to JOHN MERCER, at the address below, quoting reference NGW73. Applications, which will be treated in strictest confidence, are invited from either sex.

c. £12,000

## SOFTWARE QUALITY ASSURANCE

To £14K

Our client, an international minicomputer manufacturer, is enjoying a dramatic growth in sales due to innovative design and exciting business plans. Continued success depends on exacting quality assurance of new software releases, and to this end we are recruiting an additional Senior Software Quality Assurance Analyst.

The successful candidate will be well versed in software quality assurance, have sound software systems and programming experience and proven interpersonal communications skills. He will also have software test plan development and execution experience with a software functional specification and design review background.

In return you will enjoy a challenging project leader position with a team of analysts, and the opportunity to grow with this continually expanding group.

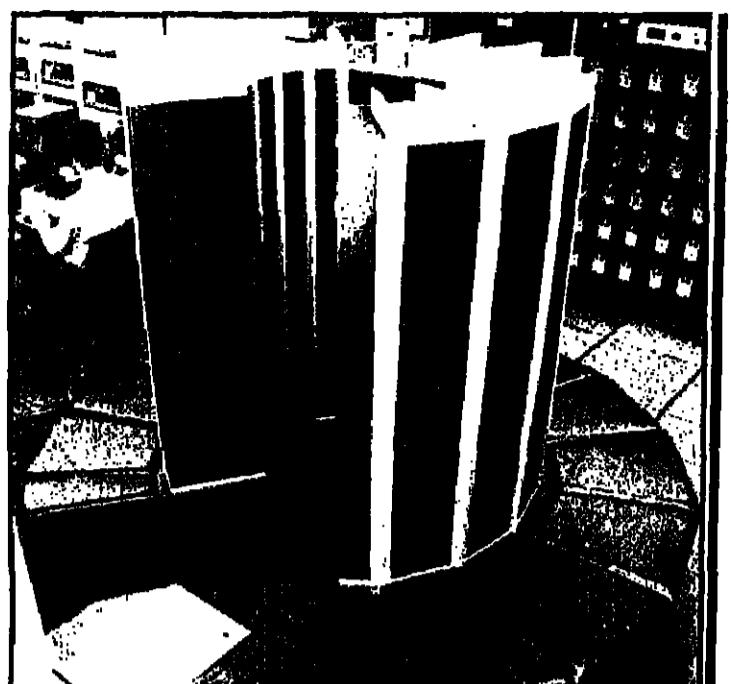
For further details please telephone Keith Taylor at our Reading office (0734) 596346 or write enclosing a full C.V.

BIS Applied Systems Limited  
York House, 199 Westminster Bridge Road  
London SE1 7UT  
Telephone 01-633 0866



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London W1R 5FA  
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Cray supercomputers in Paris provide London bureau SIA with immense computing power.

## Market for skills lifts

Philip Hunter finds an area where specialists are in demand

**THERE** never has been a recession if your skills are rare or popular, for example, in IBM CICS, or software engineering. It is in specialist areas like these that there has been a pronounced lift in the market during the first half of this year.

One agency reports that salaries for software engineers have risen by 15% in the last six months. Software houses in general are recruiting more, and in particular, opportunities are springing up in microcomputer applications. The number of software houses specialising in micros has grown dramatically in the last two years.

But the picture is one of two distinct groups. Specialist people, especially in real-time programming, are precious as diamond. But beginners, particularly those without degrees, are still finding it a struggle to get their feet in the market.

One agency, Comshare, recently received 400 replies to an advertisement for programmers and senior programmers with degrees aged 21 to 30, with salaries of up to £13,000. There were only seven vacancies.

The surplus of junior people is reflected in salaries, which are at best just about keeping pace with inflation, according to most of the agencies and bureaux. A typical programmer with a year's experience can now expect to earn about £7,500.

The market for programmers of Cobol, still by far the most popular language for commercial data processing, is picking up, according to most agencies.

"The market is more buoyant and there are many more jobs than 12 months ago," says Neil Williams, head of permanent recruitment for Knight Computer Services.

The emphasis, he says, is more and more on real-time and IBM CICS.

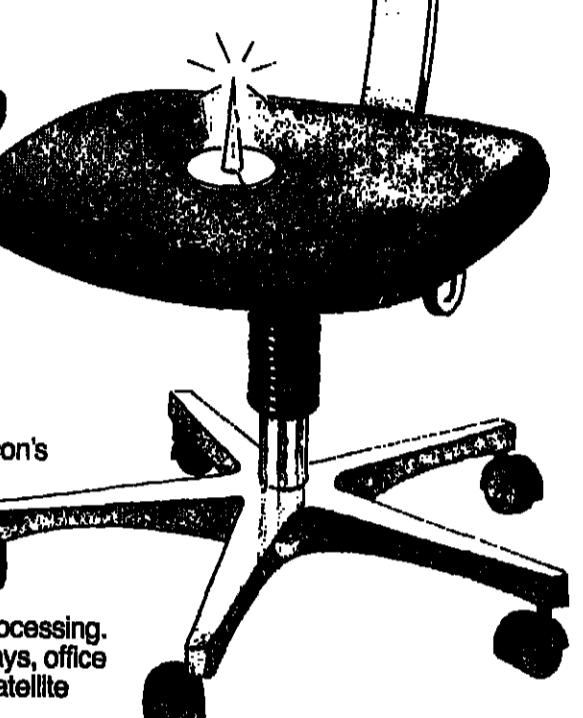
London bureau SIA specialises in technical applications, and is holding its ground in the market. Staff turnover has speeded up as the recession has eased, according to the bureau's Elaine Priestley.

SIA offers users immense computing power, with access to Cray supercomputers at the company's parent company's JET Park, and an IBM 3032, as well as Control Data mainframes in London.

Competition is intense between bureaux on the commercial side. Some are offering to nurse their

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best in the computer services industry. To qualify we'd prefer you to have a numerate degree, plus experience of real-time systems development, preferably on proprietary networking systems, covering one or more of the following:-

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So the new Designer/Programmer/Graduates we're seeking will find no break between one challenge and the next. They'll be based at our London HQ, probably spending time overseas at client sites in Europe and America, definitely working at full stretch on new projects, new systems and applications, taking on new responsibilities.

Such companies provide more openings than many for graduates, as they believe that the only way to conquer the staff shortage is by training people up from scratch.

Marconi took 29 graduates last year. Other companies with real-time needs, such as Logica, also have extensive graduate recruitment schemes.

But according to Beryl McLaren, of recruitment agency Jupiter, this shortage of real-time people is more apparent than real.

"Marconi finds a shortage because it wants the best people and won't pay the salaries," she says. "There are a lot of really good people around."

There are good opportunities for programmers skilled with fourth generation languages, sometimes called non-procedural languages. Tangent is at present recruiting for its Focus division, and "finding people hard to get. We are always looking for experts," says Phil Clarke, the company's head of recruitment.

However, while the fourth generation matures, two new members of the third generation of languages are offering some job opportunities. Advertisements for people to program in Ada and Chill are beginning to appear in the classified pages of Computer Weekly.

Competition is intense between bureaux on the commercial side. Some are offering to nurse their

# Scicon

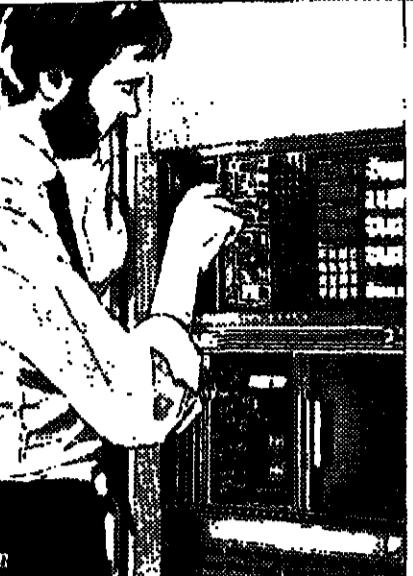
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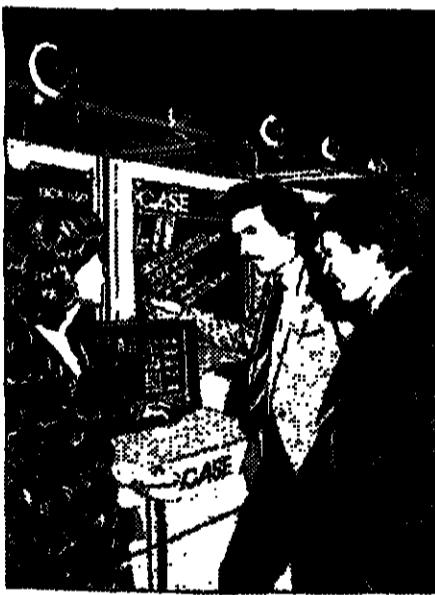
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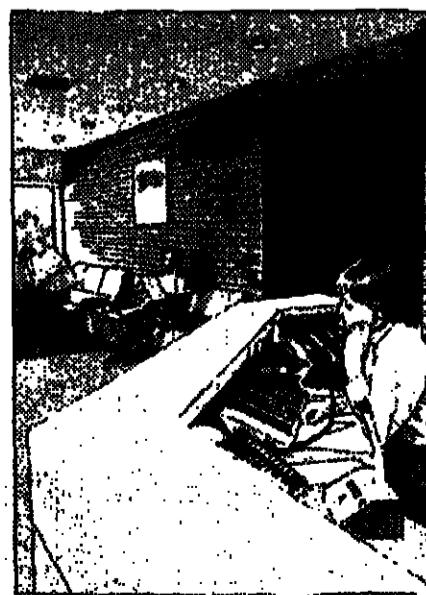


Developments in communications have made the world a much smaller place. It is now easy to pick up a phone in London and dial direct to Hong Kong. CASE takes this facility one step further. By the end of 1983, we will be selling a data network which enables people to communicate across the world, via their data terminals, as easily as if they were using the phone.

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**Digital Voice**  
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**Communication**  
**Processors**  
**Network Management**  
**Systems**  
**Technology Studies**  
**Mainframe Protocols**  
**X25, PAD, X121**  
**Local Area Networks**



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## Open Interviews

Come along to the **Cotswold Room, Selfridge Hotel, Orchard Street, London W1** on **Tuesday 19th July, between 4.00pm and 8.00pm** for a drink, a bite to eat, and an informal discussion with professionals who speak your language. They'll tell you what it's like to work for CASE, let you know about the career opportunities we have to offer, and provide you with literature to take away and read.

Make it an appointment to keep in your diary.

## Phone (0923) 33500

Call CASE direct on this number between 9.00am and 9.00pm on Monday 18th or Tuesday 19th July; one of our data communications specialists will be waiting to speak to you.

Or, if you're in the Watford area at these times, why not drop into our offices in Watford Business Park for an informal chat and a chance to look around.

If you would like more information, but it's not convenient for you to come along to our Open Evening and you're unable to contact us during our phone-in, write to or telephone during working hours, Maureen Greaves, Personnel Manager.

**Computer & Systems Engineering PLC, Caxton Way, Watford Business Park, Watford, Hertfordshire, WD1 8XH. Tel: Watford 33500.**

# CASE

**logistix** Logistix Recruitment Limited  
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Telephone 01-373 3063

## UNIX Programming Mgr

Cambridge: Salaries to £14K

Our Clients have an urgent requirement for a Programming Manager to take charge of a development team currently engaged on a UNIX-based system. Candidates should have a good Honours degree or M.Sc. and at least five years' subsequent industrial experience. Hands-on experience of Assembler and high-level structured languages is required as is a knowledge of the internals of UNIX or CP/M. As well as the ability to manage the development team, the successful applicant will also be required to directly assist in solving software problems. Generous relocation terms are available as part of a comprehensive package which includes pension and life assurance. Ref: L/26/A

## Office Automation

Berks/Hants: Salaries to £16K

A Manufacturer and Supplier of hardware and turnkey systems has a number of outstanding career opportunities for Systems Engineers and Project Leaders. Your academic background should include a good class B.Sc. Honours degree in a numerate subject augmented by two years' software system engineering experience in an environment where office automation projects are under development. In particular your software engineering and systems skills must have been acquired within one or more of the following technical areas: man/machine interfaces (ergonomics); object based system engineering (pattern and character recognition); and word processing (electronic mail/filing; single and multi-station software integration). Your primary programming skills should include PASCAL or 'C', whilst a supplementary knowledge of an Assembler is a useful asset. Ref: L/26/B

## Communications Consultants

Inner London: Salaries to £18K

A highly regarded Systems House is seeking a number of Communications Consultants for its Central London Headquarters. Successful candidates can expect to join project teams undertaking development work utilising the most advanced techniques available and they will, therefore, considerably enhance their skills. Ideally, applicants should be aged 28-35 years and be educated to at least B.Sc. standard in Computer Science or a related discipline.

You will be expected to possess a thorough knowledge of at least two of the following:-

- Communications Protocols e.g. X-25
- ISO standards
- Office Automation Systems and Networking techniques
- Market Development
- Systems Design and Consultancy
- Familiarity with UNIX or a look-alike product

A sound software development back-ground is essential and will preferably have been gained with a computer manufacturer or Systems and Software House. Good personal communication skills are also important since successful candidates will be expected to make presentations to clients and prepare reports and recommendations to exacting deadlines. Ref: AS/2

## RSX/VMS Progs

London & H. Counties: Salaries to £13K

The Communications Division of a leading Systems Supplier and Consultancy is currently seeking additional Systems Programmers. Suitable applicants should be graduates with a minimum of two years' software or systems design experience within a PDP/RSX-11M or VAX/VMS environment. It is essential that you should offer fluency in Assembler and that you are fully familiar with the internals of RSX-11M or VMS. Additional knowledge of high level language e.g. FORTRAN or PASCAL would be a distinct advantage, as would experience of working within a data communications or distributed processing environment. Applicants who demonstrate management potential or those who already have some project leading experience will be considered for more senior positions within the project teams. Ref: L/24/C

## Systems Software

Herts/Beds: Salaries to £14K

The Applied Systems Division of a leading Systems House and Consultancy requires additional Systems Software Specialists from Programmer to Senior Designer level. All applicants should be educated to B.Sc. standard and have at least two years' experience within a real-time scientific mini-computer or microprocessor environment. It is essential that you offer fluency in an Assembler and one or more of CORAL, PASCAL, BCPL or 'C'. For the senior positions, applicants should have experience in the specification, design and implementation of systems software. In particular, knowledge of language systems, interface handlers, X-25 protocoling techniques or local/wide area networks will be highly desirable. Ref: L/26/D

## Operational Research

London: Salary to £13.5K

A number of Operational Analysts are required by this London-based Consultancy. Academically, you should hold at least a first or second class B.Sc. Degree in Mathematics, Physics or Statistics. An M.Sc. or Ph.D. in Operational Research is a distinct advantage and will certainly reflect in the salary offered. Past work experience should include one or more of the following areas: war gaming and scenario studies, mathematical programming and analytical modelling, navigation systems assessments, reliability studies and data reduction. An important feature of these positions is the ability to communicate software and O.R. techniques to non-technically minded personnel. There will also be a degree of travel to client sites. Ref: L/26/E

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An experienced manager is required to manage a small group of multi-disciplined CAD/CAM Specialists.

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Application Specialists at both senior and junior level are required for our consulting and applications group. These staff provide technical support to our customers and sales teams. Their responsibilities include acting as a focal point for technical information between our parent in the USA and Europe, together with the provision of market intelligence and liaison with Marketing/Research and Development in the U.S.A.

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- (1) Integrated circuit design.
- (2) Printed circuit board layout.
- (3) Mechanical engineering design (finite element analysis, surfaces and solids).
- (4) Petro chemical applications such as piping, and three-dimensional schematics.

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Please contact: Mr W. D. N. Davies, Calma Company, Beech House, 373/399 London Road, Camberley, Surrey GU15 2HR. Telephone: (0276) 682021

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The person will be responsible for giving advice and support to Calma personnel and customers across the range of Calma computer systems. Experience in the use of VMS is essential. A minimum of four years' experience of the use of computers in an engineering environment is required. Experience in one or more of the following areas would be an advantage.

Communications: CAD/CAM; Numerical Control; Finite Element Modelling; Data Base Design and Implementation.

## SENIOR SOFTWARE ENGINEER (COMMUNICATIONS)

The person will be responsible for giving advice and support to Calma personnel and customers on the communications software available to link Calma systems, both to each other and to other mainframe and mini computers. A minimum of four years' experience of the use of computers in an engineering environment is required.

Salary is negotiable according to experience and benefits include free membership of BUPA, a contributory pension scheme and over four weeks annual leave.

Please contact Robin Mills for an application form:

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Ferranti Computer Systems, Europe's leading supplier of real-time equipment for industrial, commercial and military applications, has recently announced record turnover and profit figures for the financial year 1982/83. Located close to the countryside of rural Cheshire, yet conveniently near to Manchester International Airport and the national motorway network, the Wythenshawe Division designs and produces systems for commercial applications.

It is in the supply of micro processor based products for industrial, commercial and office use that the highest rate of growth is being achieved, notably in the areas of communications and information systems. These include private and public message switching; network architectures; telemanagement and telex; data handling; transport applications; and more increasingly design and support of office products.

Excellent opportunities now exist for suitably qualified staff to join small groups designing and implementing an exciting product range. We particularly wish to recruit professionals with the following skills:-

## Systems Designers and Consultants £8k-14k + bonus

Successful candidates are likely to have several years experience of real-time system development and knowledge in the following areas is particularly useful:-

- ★ Networks and International standards
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With a minimum 12 months real-time programming experience preferred in CORAL 68 or PASCAL, although FORTRAN and CIS-COBOL will also be considered.

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For further details contact Graham Pepper on 061-491 1668 during office hours or Addington (0257) 480281 evenings and weekends. Alternatively write to Computer People North (Freepost), Sovereign House, Stockport Road, Cheadle, Cheshire SK6 2TD.

Interviews can be arranged in Manchester, Birmingham, London or Cheadle.

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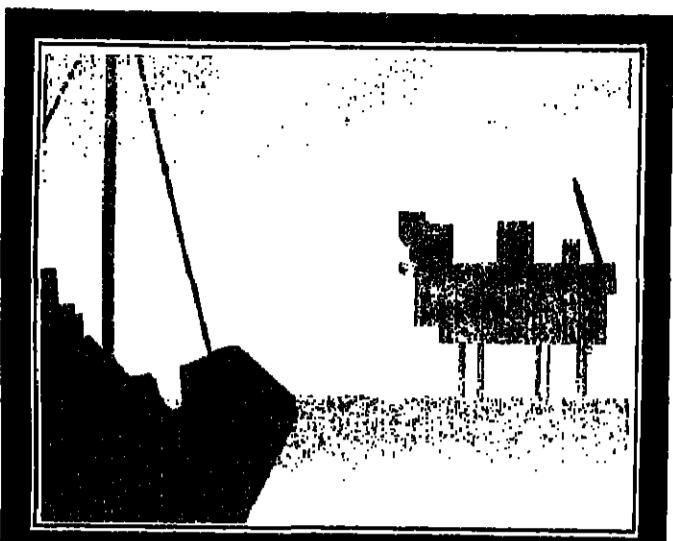
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**Systems Designers - £8k-£12.5k+ bonus.**

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- \* Oil Exploration and Production industry.
- \* Telemetry/SCADA systems.
- \* Sequence/continuous control.
- \* Display systems.

**Programmers - £7k-£9k+ bonus.**

With a minimum of twelve months real-time programming preferably in CORAL 66, although similar high level languages will be considered.

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In return you will have the opportunity to work on major projects from start to finish and enjoy the variety of working for a systems house together with the security of a major computer manufacturer. You will be rewarded with a good salary, together with a quarterly bonus and the opportunity to earn overtime at premium rates. For Aberdeen appointments an additional allowance is payable and where appropriate generous relocation will be offered to either location.

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Commercial Design	Herts
<b>IBM SYSTEM 34/38 MAAPICS</b>	to £13K
	Sussex

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<b>COMMS/TELECOMS/MOD</b>	to £14K
Mini/Mainframe	E. Anglia
<b>HP3000/INTEL</b>	to £12K
CAD/CAM/ATE	Home Counties
<b>TERMINAL EMULATORS</b>	to £15K
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<b>CONSULTANT</b>	to £15K
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<b>TEAM MANAGER</b>	to £17K
Computer Modelling/Fluid Flow	S. London
<b>ICL/PRE- AND POST-SALES SUPPORT</b>	to £16K
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- 2) Success in, at least, one other area of DP sales
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Interested applicants should contact our Managing Director, LEN CRAY, either by letter or by telephone during business hours at the office on 01-439-8985. Alternatively, you may telephone him during the weekend on 0484-21492. Naturally, all applications will be treated in the strictest confidence.

**LORIEN**  
COMPUTER SERVICES



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Telephone 01-439 8985

# Software R&D

in Ireland

Ireland, with its highly progressive industrial development policies and excellent leisure facilities, offers the ideal environment for those contemplating a significant career move.

Many of the top names in high technology electronics and computer industries have established successful operations throughout Ireland - companies like Prime Computer which three years ago moved a substantial portion of its manufacturing capacity to Dublin.

Prime Computer, a Fortune 500 company, develops and manufactures high performance minicomputers for worldwide distribution. As part of a continuing expansion programme in Europe, Prime has extended its International operations by establishing a Software Research & Development Department located within its highly successful and modern manufacturing plant on the outskirts of Dublin.

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IBM PL/I MVS + IBM MVS PL/I MVS JACKSON PROGRAMMERS  
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## NORTHERN

IBM 4341 IDMS CICS (MACRO) COBOL PROGRAMMERS

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UNIVAC 1050 DPS COBOL PROGRAMMERS  
D.C. IDMS COBOL ANALYST/PROGRAMMERS OR ANALYSTS  
INTEL 8080 ASSEMBLER AND REAL TIME PL/I PROGRAMMERS  
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START DATE NOW THROUGH TO NOV. FOR 8-12 MONTHS

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Computer Search & Selection Ltd  
Hamlet House, Marlowes  
Hemel Hempstead, Herts. HP1 1BB

**(0442) 40761**

6th Floor, Carolyn House, Dingwall Road  
Croydon, Surrey CR0 9XF

01-681 8311

**Computer  
Search &  
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**MICRO TRAINING CONSULTANTS**  
WEST LONDON £10-£11K + CAR

Our client, the UK operation of this leading microsoftware company who specialises in financial packages, are seeking a training consultant who can complement their 1983 expansion programme. The prospective candidate should come from a training environment who can demonstrate experience in the following areas: Developing and conducting training courses for the dealer and End User market. Experience of ACCOUNTING applications and Office Productivity Systems. You must be mature, self-motivated, bright and have an outgoing personality with good communicative skills. An excellent remuneration package is offered including overseas travel, company car, bonus and BUPA. For more information on the next career move you'll never regret, ring SHIRLEY FRANCIS, quoting Ref: 8828. (4643)

**Lloyd Chapman  
Associates**  
123, New Bond Street, London W1V 0HR 01-499 7781

**VISION  
FOR ROBOTS!**  
C. London C £10½K

The robotics market is now growing rapidly - and to make these systems more versatile, the race is on to equip them with artificial vision. Our client already offer a powerful and fast VME-based image processing procedure - and they plan future developments around the M68000.

If you're well-qualified, have three years + solid experience in VME/SOPHWARE experience, and want to have more, call me, Vincent Melling, on 01-549 8441 - NOW! (4642)

AB EXECUTIVE (KINGSTON) LTD.

**HONEYWELL PROGRAMMER**

for a  
New DPS7 INSTALLATION

This is an interesting opportunity for an experienced Honeywell Programmer to join a small team developing a new database system. Our client already offer a powerful and fast VME-based image processing procedure - and they plan future developments around the M68000.

If you're well-qualified, have three years + solid experience in VME/SOPHWARE experience, and want to have more, call me, Vincent Melling, on 01-549 8441 - NOW! (4642)

Write giving full details of qualifications and experience to: Peter Barnes, Medical Insurance Agency Ltd., BMA House, Tavistock Square, London WC1H 9JD. (4643)

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MICRO OR MAINFRAME  
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you could earn extra money with  
very little effort.  
Write briefly to Box No. 1087 telling  
us what you do and giving a phone  
number. Your reply will be treated  
with confidence, and our employees  
are aware of this advertisement.  
(4671)

**CAD SOFTWARE  
ENGINEERS**

Following the highly successful launch of the Artworker CAD system for the design of printed circuits, Wayne Kerr Datum Ltd. are seeking additional Software Engineers to further strengthen the design team.

These well rewarded positions offer challenging work and excellent opportunity in an exciting market.

Applicants should apply to:

Wayne Kerr Datum Limited  
Woolborough Lane  
Crawley Industrial Estate  
Crawley, W. Sussex



Tel: 0293 543266 (4672)

**DATAPROCESSING –  
OFFICE AUTOMATION**

MOTOROLA as a leader in leading edge technology is now seeking to achieve a rapid expansion of the sales of the office automation segment of its INFORMATION SYSTEMS GROUP.

Since this is a new operation in the United Kingdom, the opportunities are attractive and challenging. The rapid establishment of the company in the United Kingdom market place for office automation products requires that only applicants with a proven successful career and experience in dataprocessing or office automation will be shortlisted.

There are currently openings for:

**SALES EXECUTIVES**  
Candidates must have successful selling experience in distributed data-processing and/or office automation products and these will be the over-riding selection criteria. Field and in-house product familiarisation training will be provided. A generous commission scheme will be operated.

**SENIOR SYSTEM ENGINEERS/  
PRE AND POST-SALES SUPPORT**

Applicants should have experience in software operation and maintenance and the ability to liaise with customers on systems software will be an added requirement.

**CUSTOMER SERVICE ENGINEERS**

Customer service/field service engineers are required with an established record of maintaining dataprocessing and office automation systems. HNC, HND and equivalent qualification will be preferred. Standby and call-out payments apply plus overtime.

We are offering attractive salaries for all the above posts, plus the use of a company car. Other benefits include: Life Assurance, Health Plan, Pension Scheme, all non-contributory, 20 days annual holiday.

Please telephone for an application form:  
Miss S. J. Bewerlin, Sec PA to Managing Director, Motorola Limited, Information Systems Group. (4651)

01-509 2161



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Specialist Computer Recruitment Ltd

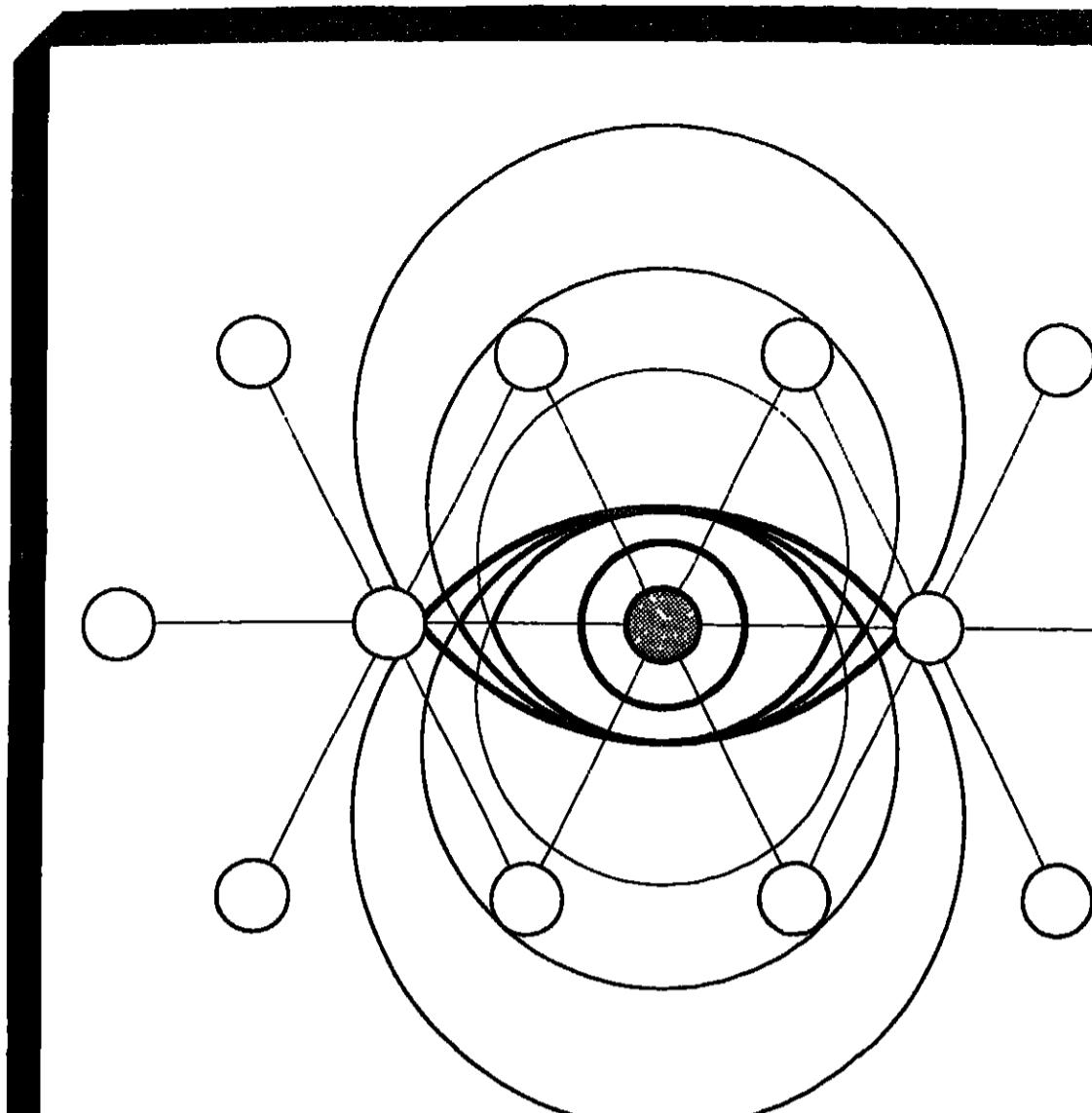
SOUTH James House, 45 James Street, London W1M 5HS 01-533 0571/488 0461

MIDLANDS & INTERNATIONAL 35-37 Great Charles Street, Queensway, Birmingham B3 3JY 021-238 3781

NORTH International House, 84 Deansgate, Manchester M3 2ER 061-333 0427

BELGIUM Avenue Louise 327, Bte 4, 1050 Brussels, 010 522-840 7151/71

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**Plotting possible futures**

Opportunities now exist within an internationally successful organisation to develop high technology display systems at their recently established division in Surrey. Whilst providing the security of a large company the division is small enough to operate autonomously having a young management team which has already created a friendly and dynamic work environment.

**SENIOR ANALYSTS TO £12,500  
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Young and enthusiastic Senior Analysts and Programmers are invited to join small highly creative design teams utilising the latest techniques on 8086/80286 micro processor hardware.

Ideally you will have experience in some of the following:-

HIGH LEVEL LANGUAGES (RTL/2, PLM/86, CORAL)  
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HOST/TARGET DEVELOPMENT USING VAX 780

You will become involved with:-

LAN (ETHERNET)  
X25 PACKET SWITCHED NETWORKS  
DISTRIBUTED DATABASE SYSTEMS  
RASTER GRAPHICS  
GRAPHICS KERNEL SYSTEM  
DIAGNOSTIC SOFTWARE

For further details regarding these vacancies please telephone in strictest confidence Miles Richards on 01-938 1804 (24hrs) or 01-847 2385 (7pm-9pm).

(4610)

**IPP Information Processing People**  
20 Kensington Church Street, London W8 4EP  
Telephone 01-938 1804 Telex 22861

## Senior Systems Software Engineer (Mini/Micros)

to £15,000 + Car

**Birmingham  
(Generous relocation)**

**Overseas Travel**

Our Client, a hugely successful public group, operate at the forefront of what can genuinely be described as, 'leading edge' microprocessor based technology. Their, already highly acclaimed, product line has achieved remarkable success, and they have made substantial investment in a new product which will not only consolidate their dominant position at home, but further establish their reputation abroad.

Their exceptional, and continued, growth and success has now created an additional requirement within their small specialist team for an experienced Software Technician. The successful Candidate will have sound experience of system software, and specifically operating systems and languages, and it is essential that this experience has been gained within a mini or micro environment. Whilst experience of any of the following - MS-DOS, CP/M 86, UNIX, PASCAL - would be most welcome, overall ability is more important.

This is a key appointment, and is a significant opportunity for technical advancement, and unrivalled prospects within a highly professional and dynamic Organisation.

The skills sought will be highly valued, consequently an extremely attractive salary and benefits package is offered, which will include company car, and very generous assistance with relocation.

For further information, and to arrange a confidential interview, please contact our Advising Consultant Peter Lees on 021-238 3781 (24 hour answering service) or 0902 632141 (Evenings and Weekends).

**DALROTH**

# MANAGER COMPUTER SYSTEMS DEVELOPMENT

Salary to £25,000  
Plus benefits

Our Client, a major Middle Eastern Banking Organisation with IBM System 34, 4341 & 4331, is using MIDAS for the Treasury and Merchant Banking activities and CAPITI for domestic banking on the IBM hardware. They will be introducing the CAPBANK system on an NCR 8565 for the domestic banking front office applications.

This position is a new one and the objectives are:

- to assist the Data Processing Manager in the computerisation of the Bank's operating and administrative systems and to manage the Bank's ongoing computer operations including systems analysis, programming, data preparation, equipment operation and maintenance.
- to develop the long-term computerisation programme for the Bank and ensure that short-term recommendations are compatible with the long-term programme and to supervise systems analysis design and programming stages for all new systems.

The ideal applicant will have extensive systems development experience, very considerable banking experience gained on IBM and NCR equipment and a knowledge of the products being used. However, applicants with extensive systems development and management experience, preferably gained in a banking or financial environment on either NCR or IBM equipment, will also be considered. Experience in the Middle East would be an added advantage.

A very attractive package will be offered to include Married or Single status, free furnished accommodation, medical insurance, car allowance, leave flights, etc.

The Client will be in the UK to conduct final interviews during early August.

For further information, please telephone Roger Allington or Sarah Oram on 01-493 2947 9am to 9pm, or weekends Roger Allington on Little Gaddesden (044284) 3536 quoting Ref 9991.

**DALROTH & PARTNERS LTD, 4 HALF MOON STREET, LONDON W1**  
Telephone 01-493 2947

## GROUP COMPUTER DEVELOPMENT MANAGER

The Liley Group is engaged in the construction industry, operating through a number of autonomous subsidiaries located in the U.K. and overseas, using a variety of mainframe and microcomputers on both accounting and technical applications.

The Group wish to appoint a Computer Development Manager to plan, recommend and implement a systematic development of the utilisation of modern computer techniques, and to co-ordinate that development within the U.K. subsidiaries, including the maximisation of existing resources.

This will be a senior appointment and the successful candidate must be able to communicate with senior management, accountants and engineers in practical terms, in order that the Group can take full advantage of developments in computer technology to assist in the management of its business. Knowledge of the construction industry is essential.

Salary is negotiable, with benefits package including company car, perks scheme and (if appropriate) relocation expenses.

Please apply giving full details of qualifications and career to date to:

**LILEY**  
GROUP  
The Group Financial Director,  
F. J. C. LILEY PLC,  
331 Charles Street,  
Glasgow G21 2QX

The Group Financial Director,  
F. J. C. LILEY PLC,  
331 Charles Street,  
Glasgow G21 2QX

R. M. O. McCULLOCH  
Director of  
Manpower Services

Strathclyde  
Department of Education (4642)

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A Division of TRIAD Computing Systems Limited based in Guildford, Surrey needs talented and adaptable programmers to work on:

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We are looking for people with high ambitions and offer rapid progress on merit, to positions of responsibility in systems design and project management.

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**TRIAD** Computing Systems Limited  
Reporting to: Michael Fulton  
Systems & Applications & Software  
TRIAD Computing Systems Limited  
108 Woodbridge Road, Guildford, Surrey  
GU1 4PY. Telephone: 0483 3779

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**£26K + BMW or equiv + benefits**

1. **THE COMPANY**  
Advanced Systems (UK) Ltd is part of a multi-national Corporation and leading producer of training products and services for the DP industry with an annual growth rate in excess of 35%.
2. **THE JOB**  
To extend and support the existing Customer Base by aggressively selling and promoting our extensive range of multimedia and computer-based training courses and related services.

3. **THE PERSON**  
The successful candidates must be able to clearly demonstrate either:

- A. A proven and successful record in executive level sales. Experience within DP or related industries would be an advantage.
- B. The ability to successfully utilise extensive DP knowledge - gained whilst working as a DP professional (S/A etc.) - in a sales environment.

4. **THE BENEFITS**  
An attractive compensation plan including a basic salary of five figures, car, expenses and benefits package.

To arrange an interview telephone:  
Southern Office: 0423 622111  
Mr Tony Koch 01-622 3011  
Northern Office: 0223 477474  
Mr Barrie Pugh 061 226 0754

Please apply in writing with C.V. to:

D. Lillard, Group Data Processing Manager

**Sabah Timber South East**

(Merchants) Ltd

Xylon House, 1 Central Road, Worcester Park, Surrey KT4 8DN

14681

### JUNIOR PROGRAMMER

N.E. Surrey

Substantial group of Timber and Builders' Merchants require an Assembler Programmer to strengthen their ICL System 25 development team. Previous experience of System 10 or System 25 would be an advantage.

The position carries a salary of up to £5,750 dependent on age, end experience and 21 days holiday plus bonuses.

Please apply in writing with C.V. to:

D. Lillard, Group Data Processing Manager

**Sabah Timber South East**

(Merchants) Ltd

Xylon House, 1 Central Road, Worcester Park, Surrey KT4 8DN

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To arrange an interview telephone:  
Southern Office: 0423 622111  
Mr Tony Koch 01-622 3011  
Northern Office: 0223 477474  
Mr Barrie Pugh 061 226 0754

The Total Training Resource

14683

# PUBLIC SECTOR APPOINTMENTS

## Strathclyde

STRATHCLYDE POLICE DEPARTMENT

### COMPUTER MANAGER

Salary Scale - SO6 - £16,536-£17,736

Kilnhead Police Office, Parkfoot Street, Kilnhead

Applicants should be suitably qualified and have substantial experience of large scale interactive systems.

The successful applicant will have overall technical responsibility for the proposed Scottish Criminal Records computer installation and its associated services which will operate on a 24 hour, 7 day basis.

Duties will include defining initial staffing levels, day to day management of the computer operation, its staff and services, training of staff and users, liaise with suppliers to ensure satisfactory service and maintenance of equipment, annual budget of the unit and development and extension of equipment and programmes.

Application forms may be obtained from the Assistant Director of Manpower Services, Glasgow Sub Region, Strathclyde House, India Street, Glasgow to whom completed forms quoting Ref: G4319 should be returned by 29th July 1983.

R. M. O. McCULLOCH  
Director of  
Manpower Services

Strathclyde  
Department of Education (4642)

Anerobic Digester Research and Development Unit

### Research Assistant

(One year post)

Computing

Funded by the Ministry of Agriculture Fisheries and Food  
Salary: £4,680 - £5,808 p.a. Inc.

Applications are invited to join a multidisciplinary team working on various aspects of anaerobic digester technology. The post is for a graduate in an appropriate discipline for one year to write a computer program to assess the economics of anaerobic digestion plant. A prior knowledge of anaerobic digestion is not essential. The applicant must have experience of writing interactive FORTRAN programs for microcomputers. Experience with databases would be an advantage. The program will be written for the CASU Mini CII microcomputer running under CP/M.

Further particulars and application forms are obtainable from:

The Personnel Officer, The Polytechnic of Wales, PONTYPRIDD, Mid-Glamorgan, South Wales, CF 37 1DL Tel. (0443) 405133 ext. 2021 Please quote Ref. No. MA544

Closing date: 29th July, 1983.

14684 The Polytechnic of Wales

PORTLAND TRAINING COLLEGE FOR THE DISABLED  
MANSFIELD, NOTTS.

Applications are invited for the post of:

CHIEF INSTRUCTOR

to head the Business Studies Department of this College, which provides residential vocational training for adults.

Reporting to the Training Manager the responsibilities of this post would encompass the organisation and management of a department which provides a variety of training courses for up to 50 students.

Candidates would be expected to have a sound experience of training and instruction in business subjects and a relevant curriculum including training to be applied in the classroom. The College is about to introduce the use of microcomputers and related technological equipment as a means of training students for the business world. It would therefore be necessary for the Chief Instructor to be fully conversant in the use of such equipment as a teaching system, and to be able to introduce its use into the department.

Further particulars and application form may be obtained from the Principal, Portland Training College for the Disabled, Harrow Wood, Nottingham Road, Mansfield, Notts. NG18 4TJ. Telephone: Mansfield 782141.

14685

### Computer Division Senior Computer Operator to £9,399

To assist the Shift Leader with the efficient and effective running of a computer operations shift.

A two-shift system is currently in operation using ICL 2986 and ME28 hardware, running under CME (VME/B and DME/George 3) and TME. An expanding communications network based on DRS and 7502 systems is also in use.

A minimum of two years' relevant experience is required and a demonstrable knowledge of VME/B is desirable. Further technical training will be given as necessary.

A. A proven and successful record in executive level sales. Experience within DP or related industries would be an advantage.

B. The ability to successfully utilise extensive DP knowledge - gained whilst working as a DP professional (S/A etc.) - in a sales environment.

For an informal discussion about the post, ring Peter Blantz, Computer Manager on 01-748 2077, ext. 204.

Application forms from London Borough of Hammersmith & Fulham (Personnel), PO Box 807. Tel: 01-741 0804 (24-hour answering service), quoting reference FC 50. Closing date: 1st August, 1983.

14686

APPLICATIONS WELCOMED FROM DISABLED PEOPLE

Hammersmith & Fulham

14687

DURHAM UNIVERSITY

Digital Systems Design for  
Computer Graphics

Applications are invited for a  
RESEARCH ASSISTANT

to work on an established SERC project in the field of computer graphics, to produce a very high speed display processor using special purpose LSIs circuits. These integrated circuits are being designed as part of the project and will be fabricated by the S.R.C. at the Rutherford Appleton Laboratory. Candidates should preferably have postgraduate industrial or research experience in any of the following fields - software development, graphics and character reader and package software for computing in the arts.

The appointment will be within the University Research Staff scale 1B (£310-£3475 per annum) plus superannuation.

Applications (three copies, naming three referees) should be sent to the Registrar, Science Laboratories, Rutherford Appleton Laboratory, Didcot, Oxfordshire OX11 0QX by 12 August 1983, from whom further particulars may be obtained.

(4659)

The appointment will be for two years from as soon as possible.

Initial salary on scale 1B £6310-£7180, plus superannuation.

Further details and application forms may be obtained from:

The Director's Secretary

Oxford University Computing Service

13 Banbury Road, Oxford OX2 8HH

Telephone: (0865) 65721

Closing date for applications: 5 August 1983.

(4654)

OXFORD UNIVERSITY COMPUTING  
SERVICE

COMPUTING IN  
THE ARTS -  
ADVISOR

Oxford University Computing Service has a vacancy for an external advisor in computing in the arts, for which it is a leading exponent. The successful applicant will be responsible for the development and promotion of the use of the natural sciences which the Service provides, including a Laserbeam photocopier, KODAK optical character reader and package software for computing in the arts.

The appointment will be within the University Research Staff scale 1B (£310-£3475 per annum) plus superannuation.

The post is established for three years.

Further details and application forms may be obtained from:

The Director's Secretary

Oxford University Computing Service

13 Banbury Road, Oxford OX2 8HH

Telephone: (0865) 65721

Closing date for applications: 5 August 1983.

(4654)

CANNOCK CHASE DISTRICT COUNCIL  
TREASURER'S DEPARTMENT

COMPUTER STAFF

The Council is installing an ICL ME29 to replace computer facilities currently being provided on an agency basis by other Authorities.

A comprehensive development plan is being prepared for the introduction of computer systems for a wide range of the Council's services and it is anticipated that these will be implemented within a two-year period.

This will provide an exciting opportunity for staff to participate in the installation of new equipment and be responsible for the development of a new and comprehensive service.

In order to ensure a smooth transition to the new arrangements the following staff are required.

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## SALES EXECUTIVES WATCH OUT – HERE COMES THE FUTURE!

Whether or not you are currently considering a change of employment, you ought to be asking yourself if your company has the necessary resources to assure its own survival as well as your career development in this industry of technological leap-frog. Does it have?

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If so, you may already be employed by our client. If not, here's your chance to advance into a company with real opportunities for personal development. All you need is a proven ability to:

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and successful candidates can expect a remuneration package which includes a company car, pension fund and health insurance, as well as on-target earnings of

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Please supply complete career details to Alasdair Scott in London, or Roger Dodd in Lichfield, quoting reference SSA/073.

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Please contact Niall Skidmore or Elaine Westwood.

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### EDUCATION DEPARTMENT

## Computer Electronics Supervisors (2 posts)

**£9,060-£9,945**

We are seeking persons with proven experience in either electronic hardware design, maintenance and construction or computer programming and allied skills for an Information Technology Centre to be opened shortly in the Chatham area. The aim of the Centre, which is jointly sponsored by the Kent County Council and Marconi Avionics, is to help unemployed young people gain work experience and training in such fields as electronic computer assembly, control systems, computer maintenance, digital techniques, word processing and teletext.

Experienced persons are required to supervise groups of trainees, therefore an empathy for the young unemployed is essential.

The appointment is for an undetermined period and will assist only while the Programme is in being. Preference given to unemployed persons having the necessary qualifications.

For further information telephone Mr J. Richards (Manager) on 0865 575928.

Job description and application form returnable by 30th July 1983 from W. H. Petty, Esq., the County Education Officer (P4), Springfield, Maidstone, Kent ME14 2LJ (SAE please).

**KENT COUNTY COUNCIL**

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## SALES EXECUTIVES MIDLANDS & SOUTH WEST

The Distribution Industry offers enormous potential for systems houses, particularly our client who is one of the highest respected, as well as one of the largest and longest established in the business with a very powerful and well established product offering.

We are seeking candidates with sales experience within the Distribution Industry who would appreciate a move to a company with real technical excellence and career opportunities for achievers.

Please contact Roger Dodd in Lichfield, quoting reference DSF/073.

## SALES EXECUTIVES MANUFACTURING SYSTEMS EAST MIDLANDS & LONDON

If you are currently involved with manufacturing systems, you will be very much aware of our client's outstanding product; a real market leader in mini-computer based manufacturing systems.

If you want to increase both the quality of the product you are selling, as well as your career prospects, this is an ideal opportunity. This of course, is based on the assumption that you already have experience of selling manufacturing related products.

Contact Alasdair Scott in London, or Roger Dodd in the Midlands, quoting reference DSG/073.

## SALES EXECUTIVES NORTHERN ENGLAND MIDLANDS LONDON & SOUTH

Many new company and/or new product situations turn out to be a career cul-de-sac. Here is an opportunity for experienced computer salespeople to be part of a new phase of expansion within an established major international manufacturer offering real career prospects, a comprehensive range of computer systems, extensive training facilities and a very powerful new product announcement. A company car is provided and on-target earnings will be

**£25,000**

Please contact Alasdair Scott in London, or Roger Dodd in Lichfield, quoting reference SSB/073.

## SALES EXECUTIVES EDINBURGH/ ABERDEEN

We can assure you that whatever assumptions you make about these two jobs based on the following features/benefits, will be an undervaluation of their real potential.

\* Latest product announcements at least a year ahead of competition.

\* Over 25 new product announcements at least a year.

\* Most of current management graduated from within the company.

\* Vacancies result from expansion.

\* We are talking about actual earnings, not make-believe, when we talk about

**£25,000 + Company Car**

If you are an accomplished computer industry salesman residing in Scotland, please call Roger Dodd in Lichfield, quoting reference DSE/073.

### LONDON & SOUTH

29 Oxford Street,  
London W1. (01) 734 9776

Answering Service after 6 pm and weekends  
SALES TRAINING, MARKET RESEARCH, RECRUITMENT

### MIDLANDS & NORTH

Cathedral House, Beacon Street,  
Lichfield, Staffs. (0543) 56612

## SALES BIT

Quality of management – 60

# Sales people have role in credit chasing

CHASING overdue accounts could be seen by the salesman as a degrading and unrewarding process. It is easy to feel embarrassed about harassing people for money, and even if carried out successfully, it results only in the payment of money that you assumed was rightly yours when you sold the product.

He said: "Don't spend your money on litigation, until you have tried nuisance and intimidation." (Yes, it's such good advice it even rhymes!) So, we created a barrage of telephone calls and letters to the debtor's key people and sent one of our consultants (6ft 5in, 17½ stones) to ask nicely for the money.

The salesman must see the process as an essential and justifiable sales related activity rather than a time-wasting imposition.

It is important to realise that when a client does not pay on time, he is failing to honour his promises; he is defrauding his supplier of the interest; the outstanding money could be generating; he may be totally dissatisfied with his purchase; he is establishing grounds for the salesman having to return the related commission; he may be going bankrupt! So it is essential that appropriate action be taken promptly and strongly, for the salesman and the company have much to lose by assuming that responsibility for chasing overdue accounts resides elsewhere.

Maintenance of effective credit control procedures and the communication of up-to-date information must rest within the accounts department, as should the initial

There is no substitute for prompt and positive action, face-to-face collection and continued badgering. After all, your money is sitting in their bank account when it should be earning interest in yours or offsetting your expensive overdraft

continued badgering. After all, your money is sitting in their bank account when it should be earning interest in yours or offsetting your expensive overdraft.

However, I believe it is important that salespeople are kept informed about every stage of credit chasing right from the first reminder. Often a personal reminder from the salesman at an early stage can avoid a confrontation later.

Legal action is far removed

from being an absolute solution and this reality is fully exploited by many unscrupulous companies. They realise that litigation is an expensive and time-consuming process that most suppliers would prefer to avoid. Further, they know they can hang on to their money right up to the day of the hearing, pay at the last minute, and get away with it; many months having passed in the meantime. They also appreciate that, even if they do get involved in legal proceedings, the court's sympathy is usually bestowed on the debtor rather than the plaintiff.

Consequently, you could find your outstanding account being spread in easy payments over the next millennium.

In fact, getting a court settlement in your favour could be the worst thing you ever did.

The Small Claims Court can, depending on the size of the debt you are chasing (the maximum is £500), bring about much swifter settlement than the normal judicial procedure; but this size of debt is far below the value of typical computer industry invoice. Nonetheless, the same risks of unsatisfactory settlement still apply.

My own company recently had a badly overdue account with a program package company. It

## Scientific Databases

A vacancy exists in the Database Section of the Computing Division, Rutherford Appleton Laboratory for someone to work on Scientific Databases.

The work is of an interesting and varied nature supporting Scientists using database techniques in their projects, providing advice and assistance and investigating new techniques in the area of databases.

The Laboratory, in collaboration with Universities, supports exciting research programmes, both here and abroad, in Physics, Astronomy and Information Technology.

Applicants should have a degree equivalent in a Scientific, Mathematical or Engineering subject and have expertise in, at least some of the following:

Systems Analysis, Design and Implementation  
Programming in FORTRAN  
Data Analysis

Scientific Data Handling

Training will be given where necessary. Scientific education or experience would be an advantage.

Appointment will be made within one of the grades depending on age, qualifications and experience.

Scientific Officer £5,682-£7,765  
Higher Scientific Officer £7,149-£9,561

Some assistance with the expenses incurred in house sales/purchase may be available.

Appointment as Higher Scientific Officer requires a good honours degree and several years relevant experience.

For an application form, please write to Recruitment Officer, Science and Engineering Research Council, R.A.L., Chilton, Didcot, Oxon, OX11 0QX. Tel: Abingdon (0335) 445435 quoting Ref VNI/54.

Closing date: 4th August 1983

**serc** Rutherford Appleton Laboratory

## DATA PROCESSING DEVELOPMENT & TRAINING OFFICER

### MALAWI

The Government of Malawi require a Data Processing Development and Training Officer for the Computing and Training Function of the Malawi Railways Improvement Project — a 5 year programme of aid and manpower and track rehabilitation.

The Officer would have overall responsibility for the control of the Data Processing Function; identification, planning and implementation of computer systems in accordance with the company's objectives; setting standards for analysis and programme work.

Qualifications: Applicants, who should be British citizens, should be graduates with experience of running a Data Processing Department together with personal Programming and Analysis experience. Prior experience in an ICL environment is desirable.

Appointment: 18 months in the first instance. Posting: Limbe; salary (UK taxable) in accordance

with qualifications and experience plus a variable tax free overseas allowance currently in the range £1,480-£3,165.

This post is wholly financed by the British Government under Britain's programme of aid to the developing countries. In addition to basic salary and overseas allowances other benefits normally include paid leave, free family passages, children's education allowances and holiday visits, free accommodation and medical attention.

For full details and application form, please apply (not later than 26 July) stating clearly post applied for, quoting ref. IAH 357 DSMI and giving details of age, qualifications and experience to:

Appointments Officer,  
Overseas Development Administration,  
Room AH251,  
Abercrombie House,  
Egglesham Road,  
EAST KILBRIDE,  
Glasgow G76 6EA.

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